

January 2000



# *Server Paper Configurator Guide*



## **IBM Netfinity Servers**

### **Racks**

### **Storage Enclosures**

### **Fibre Channel Solutions**

### **Options**





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# Information Sources

Canada		
Audience	Where to go	How to get
<b>Server Paper Configurator Guide</b>		
Customers	<a href="http://www.ibm.com/pc/ca/netfinity/tech_library.html">www.ibm.com/pc/ca/netfinity/tech_library.html</a>	Select "Technical Info."
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<b>OrderBUILDER<sup>1</sup> (updated bi-weekly)</b>		
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Customers	<a href="http://www.ibm.com/pc/us/netfinity/tech_library.html">www.ibm.com/pc/us/netfinity/tech_library.html</a>	Select "Configuration Tools"
Business Partners	<a href="http://www.pc.ibm.com/partner/us/">www.pc.ibm.com/partner/us/</a>	Select Sales Tools, then Marketing Essentials, then IBM PC Server--> Rack Configurator. User ID and Password required.
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Clustering (CAN)	<a href="http://www.ibm.com/pc/ca/netfinity/clustering.htm">www.ibm.com/pc/ca/netfinity/clustering.htm</a>	Select desired category or Server
Benchmark Results	<a href="http://www.ibm.com/pc/us/techlink/srvperf.html">www.ibm.com/pc/us/techlink/srvperf.html</a>	Select desired category or Server
Options/NOS/Server compatibility	<a href="http://www.ibm.com/pc/us/compat">www.ibm.com/pc/us/compat</a>	From pulldown select desired category
NOS - Hot-Plug/Failover Support	<a href="http://www.ibm.com/pc/us/compat">www.ibm.com/pc/us/compat</a>	From pulldown select "Netfinity Hotplug PCI and Failover Info".
IBM Storage Products	<a href="http://www.ibm.com/storage">www.ibm.com/storage</a>	
Adobe® Acrobat® Reader V 3.0 or 4.0	<a href="http://www.adobe.com/prodindex/acrobat/readstep.html">www.adobe.com/prodindex/acrobat/readstep.html</a>	Follow instructions.
Adv. Sys. Mgmt. Adapter Firmware	<a href="http://www.ibm.com/pc/us/netfinity">www.ibm.com/pc/us/netfinity</a>	Select "Support", "Family", "Model", "Downloadable files" and "Advanced Systems Management".
Flash BIOS Updates	<a href="http://www.ibm.com/pc/support">www.ibm.com/pc/support</a>	Enter machine "Type-Model" in Quick Path. Select "Downloadable files" then "BIOS".
ServeRAID Updates	<a href="http://www.ibm.com/pc/support">www.ibm.com/pc/support</a>	Select "Server" in Brand pulldown, "ServeRAID" in Family pulldown and then "Downloadable files".

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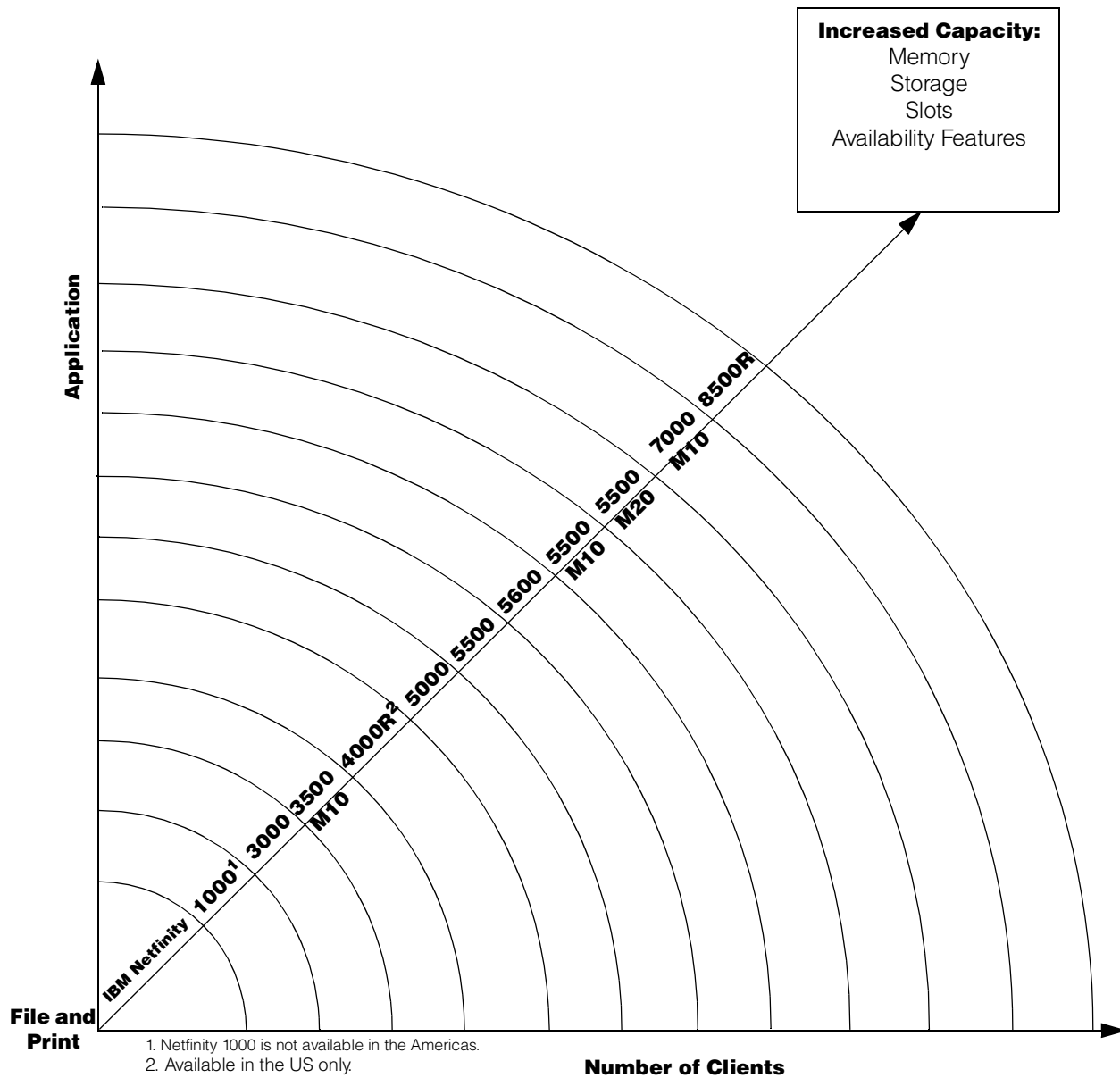
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The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.



# Server Product Positioning





When in a competitive situation, this table suggests the appropriate IBM Netfinity server to bid against other vendors' equipment. However, as an IBM business partner, you may determine that customer specific requirements may make an alternative IBM solution a better choice

	IBM 1st Choice	IBM 2nd Choice	Compaq	HP	Dell
<b>High End</b>	Netfinity 8500R	RS/6000 AS/400	ProLiant 8000, 8500	NetServer 8500	8450
	Netfinity 7000 M10	Netfinity 8500R	ProLiant 6400R 6500, 7000	NetServer LXr, LXr Pro	PowerEdge 6300
<b>Mainstream</b>	Netfinity 5500 M20	Netfinity 7000 M10	ProLiant 5500, 5500R, 6500, 6400R	NetServerLH4/4r	PowerEdge 6300, 6350
	Netfinity 5500 M10	Netfinity 5500 M20	ProLiant 3000, 3000R, 5500, 5500R	NetServer LH3, LH4	PowerEdge 4300, 6350
	Netfinity 5600	Netfinity 5500 M10	ProLiant 3000, 3000R	NetServer LH3	PowerEdge 4300, 4350
	Netfinity 5500	Netfinity 5600, 5500 M10	ProLiant 3000, 3000R	NetServer LH3	PowerEdge 4300, 4350
	Netfinity 5000	Netfinity 5600	ProLiant 1850R, 1600, 1600R	NetServer LHIII, LH Pro, LC3, LPr	PowerEdge 2300, 4350
	Netfinity 4000R <sup>2</sup>	Netfinity 5000	ProLiant 1850R	NetServer LPr	N/A
<b>Entry</b>	Netfinity 3500 M10	Netfinity 4000R <sup>2</sup> 5000R	ProLiant 400, 1600, 1600R	NetServer LHIII, LH Pro, LC3, LPr	PowerEdge 1300
	Netfinity 3000	Netfinity 3500 M10	ProSignia 200, 720 ProLiant 400	NetServer E60	PowerEdge 1300
	Netfinity 1000 <sup>1</sup>	Netfinity 3000	NeoServer	NetServer E60	PowerEdge 1300

1. Netfinity 1000 is not available in the Americas.  
2. Available in the US only.



# Server Selection Guidance

This graph represents general guidelines for selecting the appropriate server based on the number of users that can be supported in a particular application environment. This chart is for general guidance since each customer environment is unique and is unlikely to be precisely represented by any of the specific applications in the chart, but by using the chart, a reasonable approximation can be derived. External Storage Units are utilized when internal capacities are exceeded. Utilize the chart by following the steps outlined on the following page.

These are not published benchmark results. Access <http://www.ibm.com/pc/us/techlink/srvperf.html> to obtain benchmark data.

Application/ Expectation of Maximum # of Users		Netfinity 1000 <sup>3</sup> Uni-Pentium III 550 MHz/512 KB	Netfinity 3000 Uni-Pentium III 600 MHz/512 KB	Netfinity 3500 M10 Dual Pentium III 600 MHz/512 KB	Netfinity 5000 Dual Pentium III 600 MHz/512 KB
DB Transaction Processing Select, Update and Delete; Does not include image or Decision Support	# of Users	975	1050	2500	2500
	# of processors	1	1	2	2
	Memory (MB)	384	384	1 GB	1 GB
	# Hard Disk Drives	4 to 8	4 to 8	24 to 36	24 to 36
	# RAID Adapters	≥ 1 SCSI	≥ 1 SCSI	≥ 3	≥ 3
	# Network Connections	1	1	1	1
File and Print Application is stored locally. (For server stored applications - cut number of users in half).	# of Users	1000	1000	2000	2000
	# of Processors	1	1	2	2
	Memory (MB)	512	512	1 GB	1 GB
	# Hard Disk Drives	3 to 4	3 to 4	16 to 24	16 to 24
	# RAID Adapters	≥ 1 SCSI	≥ 1 SCSI	2	2
	# 100Mbps Ethernet Connections	≥ 2	≥ 2	4	4
Lotus Notes 10% Power Users 40% Mail 50% Mail & DB	# of Users	525	575	1400	1400
	# of Processors	1	1	2	2
	Memory (MB)	384	384	1 GB	1 GB
	# Hard Disk Drives	3 to 4	3 to 4	18	18
	# RAID Adapters	≥ 1 SCSI	≥ 1 SCSI	1	1
	# Network Connections	≥ 1	≥ 1	≥ 2	≥ 2
Microsoft Exchange Server 5.5 100% Med Users! 30 MB Mailbox	# of Users	500	550	1800	1800
	# of Processors	1	1	2	2
	Memory (MB)	256	384	1 GB	1 GB
	# Hard Disk Drives	3 to 4	3 to 4	9	9
	# RAID Adapters	≥ 1 SCSI	≥ 1 SCSI	1	1
	# Network Connections	≥ 1	≥ 1	≥ 1	≥ 1
SAP 3-Tier Distributed Ver 4.x Processing Sales and Distribution Application (Minimum of 16-20 Servers)	# of Users	-	-	-	-
	# of Processors	-	-	-	-
	Memory (MB)	-	-	-	-
	# Hard Disk Drives	N/A	N/A	N/A	N/A
	# RAID Adapters	-	-	-	-
	# Network Connections	-	-	-	-
SAP Central Version 4.x Processing Sales and Distribution Application (One Server)	# Users	-	-	104	104
	# Processors	-	-	2	2
	Memory (MB)	-	-	1 GB	1 GB
	# Hard Disk Drives	N/A	N/A	12 to 24	12 to 24
	# RAID Adapters	-	-	≥ 1	≥ 1
	# Network Connections	-	-	1	1
High Availability Features	Hot-Swap HDD Bays	-	-	-	X
	Hot-Plug PCI Slots	-	-	-	-
	Hot-Swap Power	-	-	-	X
	Hot-Swap Fans	-	-	-	-
	RAID	Opt.	Opt.	Opt.	Opt.
	Clustering Support	-	-	-	X
	Sys. Mgt. Processor	Opt.	Opt.	-	X
Other Distinguishing Features	Max # Processors	1	1	2	2
	Max Memory (MB)	768	768	1 GB	2 GB
	Max Int. Storage (GB)	72.8	72.8	72.8	91
	Max Int. Storage (GB) with Int. Tape drive	546	546	546	91
	Available PCI Slots	2	2	5	5
	19" Rack Models	-	-	-	X
	NetBAY3x Support	-	-	-	-





# Server Selection Guidance

Application/ Expectation of Maximum # of Users		Netfinity 5500 Dual Pentium III 550 MHz/512 KB	Netfinity 5600 Dual Pentium III 667 MHz/256 KB	Netfinity 5500 M10 Dual Pentium III Xeon 550 MHz/ 512 KB	Netfinity 5500 M20 Quad Pentium III Xeon 550 MHz/ 1024 KB	Netfinity 7000 M10 Quad Pentium III Xeon 550 MHz/ 2048 KB	Netfinity 8500R Eight-Way Pentium III Xeon 550 MHz/ 2 MB
<b>DB Transaction Processing</b> Select, Update and Delete; Does not include image or Decision Support	<b># of Users</b>	<b>2500</b>	<b>2975</b>	<b>3000</b>	<b>5400</b>	<b>5650</b>	<b>9000</b>
	# of processors	2	2	2	4	4	8
	Memory (MB)	1 GB	4 GB	2 GB	4 GB	4 GB	4 GB
	# Hard Disk Drives	24 to 36	80 to 140	24 to 36	80 to 140	80 to 140	180 to 250
	# RAID Adapters	≥3	≥4	≥3	≥4	≥5	≥6 or Fibre
	# Network Connections	1	2 to 3	1	2 to 3	2 to 3	2 to 3
<b>File and Print</b> Application is stored locally. (For server stored applications - cut number of users in half).	<b># of Users</b>	<b>2000</b>	<b>2100</b>	<b>2400</b>	<b>2500</b>	<b>5000</b>	<b>6000</b>
	# of Processors	2	2	2	2	2	3-4
	Memory (MB)	1 GB	1 to 2 GB	1 to 2 GB	1 to 2 GB	3 to 4 GB	4 GB
	# Hard Disk Drives	16 to 24	20 to 30	20 to 30	20 to 30	50 to 90	75 to 150
	# RAID Adapters	2	2	2	2	≥4	≥4 or Fibre
	# 100Mbps Ethernet Connections	4	4	4	4	8	10
<b>Lotus Notes</b> 10% Power Users 40% Mail 50% Mail & DB	<b># of Users</b>	<b>1475</b>	<b>1740</b>	<b>1975</b>	<b>3500</b>	<b>3650</b>	<b>5800</b>
	# of Processors	2	2	2	4	4	8
	Memory (MB)	1 GB	3 GB	2 GB	3 GB	3 GB	4 GB
	# Hard Disk Drives	18	20 to 30	10 to 20	20 to 30	20 to 30	30 to 40
	# RAID Adapters	1	2	2	2	2	≥3
	# Network Connections	≥2	≥1	≥1	≥1	≥1	≥2
<b>Microsoft Exchange Server 5.5</b> 100% Med Users 30 MB Mailbox	<b># of Users</b>	<b>1650</b>	<b>2100</b>	<b>2400</b>	<b>4300</b>	<b>4500</b>	<b>7000</b>
	# of Processors	2	2	2	4	4	8
	Memory (MB)	1 GB	1.5 GB	1.5 GB	2 GB	3 GB	4 GB
	# Hard Disk Drives	9	12	16	24	30	36
	# RAID Adapters	1	2	2	2	≥2	≥3
	# Network Connections	≥1	≥1	≥1	≥2	≥2	≥2
<b>SAP 3-Tier Distributed Ver 4.x Processing</b> Sales and Distribution Application (Minimum of 16-20 Servers)	<b># of Users</b>	-	<b>1800</b>	<b>1700</b>	<b>3150</b>	<b>3350</b>	<b>5100</b>
	# of Processors		2	2	4	4	8
	Memory (MB)		1-2 GB	1 GB	2-4 GB	≥4 GB	≥4 GB
	# Hard Disk Drives	N/A	24 to 36	24 to 36	48 to 60	48 to 60	48 to 60
	# RAID Adapters		≥2	≥2	≥3	≥3	≥3
	# Network Connections		1	1	1	1	1
<b>SAP Central Version 4.x Processing</b> Sales and Distribution Application (One Server)	<b># Users</b>	<b>98</b>	<b>122</b>	<b>100</b>	<b>220</b>	<b>245</b>	<b>375</b>
	# Processors	2	2	2	4	4	8
	Memory (MB)	1 GB	1-2 GB	1 GB	≥2 GB	≥2 GB	≥4 GB
	# Hard Disk Drives	12 to 24	12 to 24	12 to 24	24 to 36	24 to 36	24 to 36
	# RAID Adapters	≥1	≥1	≥1	≥2	≥2	≥2
	# Network Connections	1	1	1	1	1	1
<b>High Availability Features</b>	Hot-Swap HDD Bays	X	X	X	X	X	X
	Hot-Plug PCI Slots	X	X	X	X	X	X
	Hot-Swap Power	X	X	X	X	X	X
	Hot-Swap Fans	X	X	X	X	X	X
	RAID	X	Opt.	X	X	Opt.	Opt.
	Clustering Support	X	X	X	X	X	X
	Sys. Mgt. Processor	X	X	X	X	X	X
<b>Other Distinguishing Features</b>	Max # Processors	2	2	2	4	4	8
	Max Memory (MB)	1 GB	4 GB	2 GB	4 GB	8 GB	16 GB
	Max Int. Storage (GB)	109, 473 <sup>1</sup>	109	109, 473 <sup>1</sup>	109, 473 <sup>1</sup>	72.8	72.8
	Max Int. Storage (GB) with Int. Tape drive	109, 473 <sup>1</sup>	109	109, 473 <sup>1</sup>	109, 473 <sup>1</sup>	N/A	N/A
	Available PCI Slots	6	5	6	5	12	12
	19" Rack Models	X	X	X	X	X	X
	NetBAY3x Support	X	-	X	X	X <sup>2</sup>	X <sup>2</sup>



1. With a single Netfinity EXP15 Storage unit installed in the standard NetBAY3 included with tower models.
2. With a Rack-to-Tower Conversion Kit installed.
3. Netfinity 1000 is not available in the Americas.

#### **Procedure for Server Selection Guidance Chart**

File and Print numbers are Novell Netware-based with all others based on Microsoft Windows NT. Other Networking Operating System (NOS) results could vary. Extensive SAP sizings are available from IBM/SAP Competency Centers. Contact your IBM Marketing Representative for additional information.

**Step 1:** Determine which application (row) most closely represents the customer's environment.

**Step 2:** Move from left to right along the row (chosen in Step 1) noting which columns contain numbers that are equal to or greater than the maximum customer's planned number of users.

**Step 3:** Move up the columns (chosen in Step 2) to the top row to determine which IBM Netfinity or PC Servers should be considered as possible solutions.

**Step 4:** Evaluate other features such as storage, memory capacity, high availability components, number of available expansion slots, etc., which are unique to each server, in order to determine which is the most appropriate to recommend.

For your reference, configuration information corresponding to the number of users is also provided.





# IBM Netfinity 1000 Configurator

Part Number	Processor Speed (MHz)	Number of Processors (Std/Max)	L2 ECC Cache. (KB)	Memory (Std/Max) R=RDIMM	Form Factor	Power Supply Quantity (Std/Max)	Hot-Swap (Power, Slots, HDD, Fans)	Redundancy (Optional, Standard)	Adv. System Management Processor	Onboard Ethernet	SCSI Controller (Dual, Ultra, RAID, LVD)	Removable Media Bays (Total/Avail)	Internal Hard Disk Drive (Std/Max)	CD-ROM (IDE)	Bays: (Total/Avail)	Slots: (Total/Avail)
8477-11Y <sup>4</sup>	400 <sup>2</sup>	1/1	512	64/768 MB	Tower	1/1	-	-	-	10/100	U	4/2	0/72.8 GB	32X-14X	6/4	6/5
8477-21Y <sup>4</sup>	500 <sup>3</sup>	1/1	512	64/768 MB	Tower	1/1	-	-	-	10/100	U	4/2	0/72.8 GB	32X-14X	6/4	6/5
8477-31Y <sup>4</sup>	550 <sup>3</sup>	1/1	512	64/768 MB	Tower	1/1	-	-	-	10/100	U	4/2	0/72.8 GB	40X-17X	6/4	6/5

1. Variable read rate. Actual playback speed will vary and is often less than the maximum possible.

2. Intel Pentium II processor with 100 MHz access to memory.

3. Intel Pentium III processor

4. Netfinity 1000 is not available in the Americas.

## Netfinity 1000 Processor Upgrades

Part Number	Processor Upgrades with 512KB Cache	Processor Speed Upgrade <sup>1</sup>
36L9673	Netfinity 500 MHz/512 KB Upgrade with Pentium III Processor	All 1xY
33L5112	Netfinity 550 MHz/512 KB Upgrade with Pentium III Processor	All 1..2xY

1. Requires removal of the standard processor. A maximum of one processor may be installed. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access [www.ibm.com/pc/support](http://www.ibm.com/pc/support) and enter machine "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".

## Netfinity 1000 Memory

		Total Memory	All Models
DIMM Socket		32 MB	N/A
DIMM Socket		64 MB	64 MB DIMM Standard
DIMM Socket		128 MB	1 x 01K1130
		192 MB	1 x 01K1131
		256 MB	1 x 01K1131, 1 x 01K1130
		320 MB	2 x 01K1131
		384 MB	3 x 01K1131 <sup>1</sup>
		512 MB	2 x 01K1132 <sup>1</sup>
		768 MB (max)	3 x 01K1132 <sup>1</sup>
Part Number	Memory Description		
01K1133	32 MB 100 MHz ECC SDRAM DIMM		
01K1130	64 MB 100 MHz ECC SDRAM DIMM		
01K1131	128 MB 100 MHz ECC SDRAM DIMM		
01K1132	256 MB 100 MHz ECC SDRAM Registered RDIMM <sup>1</sup>		

1. P/N 01K1132 is a registered DIMM and is not compatible with 01K1130, 01K1131, or 01K1133. Installation of this RDIMM requires replacement of the standard DIMM.

This table does not represent all possible memory configurations.

1. Replace standard DIMM.

# Netfinity 1000 Hard Disk Drive (HDD) Storage

	Total Internal Storage <sup>1</sup>	All Models
CD-ROM	0 GB	Standard
Bay 2	9.1 GB	1 x 20L0553
Bay 3	18.2 GB	2 x 20L0553 or 1 x 20L0554
Diskette	27.3 GB	3 x 20L0553
Bay 5	36.4 GB	4 x 20L0553 or 2 x 20L0554
Bay 6	45.5 GB	2 x 20L0554, 1 x 20L0553
	54.6 GB	3 x 20L0554
	63.7 GB	3 x 20L0554, 1 x 20L0553
	72.8 GB (max)	4 x 20L0554

This table does not represent all possible hard drive configurations.

1. Total Internal Storage listed is within  $\pm 0.2$  GB unless otherwise noted.

Bay	Form Factor	Height	Front Access	Usage	Part Number	Description	RPM	Height	Bays Supported	Max. Qty.
1	5.25"	HH	yes	IDE CD-ROM	<b>Internal Hard Disk Drives (HDD)</b>					
2	5.25" <sup>1</sup>	HH	yes	open	20L0553	9.1 GB Wide Ultra2 SCSI HDD <sup>1</sup>	7200	SL	2,3,5,6	4
3	3.5"	SL	yes	open	20L0554	18.2 GB Wide Ultra2 SCSI HDD <sup>1</sup>	7200	SL	2,3,5,6	4
4	3.5"	SL	yes	diskette	<b>External Storage Expansion Units<sup>2</sup></b>					
5	3.5"	SL <sup>2</sup>	no	open	35301RU	Netfinity EXP200 Storage Expansion Unit	<b>Form Factor</b>			
6	3.5"	SL <sup>2</sup>	no	open	37L5857	Netfinity EXP200 Rack-to-Tower Conversion Kit	Rack (3U)			
							-			

1. A 3.5" conversion kit is standard in Bay 2 for installation of 3.5" hard disk drives.

2. Two slim-line bays can be combined to support a single half-height device.

1. Performs as a Wide Ultra SCSI device when attached to the standard or an optional Wide Ultra SCSI adapter or when sharing a cable with a non-Ultra2 device.

2. Not supported by the onboard external SCSI port. Select an optional SCSI controller then refer to see Appendix D: Cables-Storage Units-Controllers to confirm the controller supports the desired External Storage Expansion Unit and to select a supported cable. For HDD or other expansion unit options, see the specific expansion unit section.

rollers.

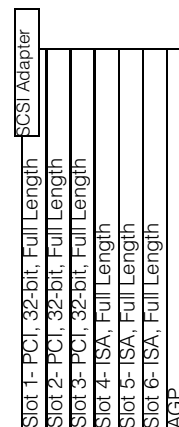
## Internal SCSI Cabling

Netfinity 1000 systems have an IBM PCI Fast/Wide Ultra SCSI Adapter and support up to four internal SCSI devices through the 16-bit internal connector or 15 external SCSI devices through the 16-bit external 68-pin High Density connector; however, when internal SCSI devices are installed to the internal connector, only one SCSI device can be supported from the external connector. All models are cabled internally with a four-drop, 16-bit wide SCSI cable with a built-in active terminator at one end. The other end is attached to the internal 68-pin single-ended connector of the SCSI adapter. On the drive models, the hard disk drive (HDD) is attached to the cable connector closest to the active terminator. On open bay models the first disk drive installed should be attached in the same manner. In the event the standard four drop cable is attached to a RAID controller and a dedicated removable media attachment to the onboard controller is required, an optional, terminated, 16-bit cable is available (Netfinity Two-Drop Internal SCSI Cable P/N 36L9636). If connecting narrow devices to this cable, additional 68-pin to 50-pin converters (P/N 32G3925) must be ordered. Some narrow devices include a converter in their ship group.



## Netfinity 1000 I/O Options

Part Number	Description	Adapter Length	PCI Support	Slots Supported
<b>Storage Controllers<sup>1</sup></b>				
01K7364	Netfinity ServeRAID-3L Ultra2 SCSI Adapter <sup>2, 3</sup>	Full	32-bit	3
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter <sup>4</sup>	Full	32/64-bit	3
02K3454	PCI Fast/Wide Ultra SCSI Adapter	Half	32-bit	1, 2, 3
<b>Networking<sup>5</sup></b>				
<b>Ethernet</b>				
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2	Half	32-bit	1, 2, 3
08L3341	Netfinity 10/100 Fault Tolerant Adapter	Half	32-bit	1, 2, 3
34L0301	Netfinity Gigabit Ethernet SX Adapter	Half	32/64-bit	1, 2, 3
<b>Token Ring</b>				
34L0501	Token-Ring 100/16/4 High-Speed PCI Adapter	Half	32-bit	1, 2, 3
34L0601	Token-Ring 16/4 PCI Adapter 2	Half	32-bit	1, 2, 3
<b>Communications</b>				
33L4618	PCI V90 56 Data/Fax Modem <sup>6</sup>	Half	32-bit	1, 2, 3
37L1414	Serial I/O SST8P DB Adapter <sup>7</sup>	Half	32-bit	1, 2, 3
37L1415	Serial I/O SST16P DB Adapter <sup>7</sup>	Half	32-bit	1, 2, 3
37L1423	Serial I/O SST16P RJ Adapter <sup>7</sup>	Half	32-bit	1, 2, 3
<b>Systems Management<sup>8</sup></b>				
94G7578	PC Server Advanced Systems Management Adapter	Full	ISA	4, 5, 6
94G5571	Advanced Systems Management Power Unit <sup>9</sup>	-	-	-



1. Netfinity 1000 includes a single Wide Ultra SCSI PCI adapter.

2. All ServeRAID-3x adapters can be upgraded with the same enhanced software utilities and firmware included with ServeRAID-3HB. The download is available for no charge from [www.ibm.com/pc/support](http://www.ibm.com/pc/support). Select "Server" in Brand pulldown, "ServeRAID" in Family pulldown and then "Downloadable files". Installed firmware of less than V3.5 should consider the upgrade.

3. Netfinity ServeRAID-3L Ultra2 SCSI Adapter (P/N 01K7364) provides either one internal or one external LVDS SCSI channel.

4. Netfinity ServeRAID-3HB Ultra2 SCSI Adapter (P/N 37L6086) provides one internal and 2 external (0.8mm VHDCI) LVDS SCSI channels. The internal channel can be configured for external usage (0.8mm VHDCI) providing a total of 3 external LVDS SCSI channels. Includes 32 MB of mirrored battery-backup cache which helps protect against data loss in write-back cache mode in the event of a power outage or adapter maintenance.

5. Netfinity 1000 has an integrated 10/100 PCI Ethernet Controller.

6. Due to homologation variances, modem availability may differ by country.

7. See Appendix E for details on Serial I/O options and configuration limitations.

8. Netfinity 1000 provides the following integrated system management features - Vital Product Data (VPD) plus thermal, voltage, and fan sensors. For additional functions, optional PC Server Advanced Systems Management (P/N 94G7578) may be utilized. To enable the adapter's Automated Restart and Alerting as well as Remote Power On/Off features, Advanced Systems Management Power Unit (P/N 94G5571) is required.

9. Provides continuous power to the PC Server Advanced Systems Management Adapter (P/N 94G7578) even when the system is powered off.

## Netfinity 1000 Power, Monitor & Accessories

Part Number	Description
<b>Power<sup>1</sup></b>	
<b>Uninterruptible Power Supply (UPS)<sup>2</sup></b>	
94G3134	APC Smart-UPS 700 (32 min. runtime at 160 Watts)
94G3135	APC Smart-UPS 1000 (51 min. runtime at 160 Watts)
<b>Monitors</b>	
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black
65474AN	G74 Color Monitor 17" (15.9" Viewable Image Size), stealth black
65494AN	G96 Color Monitor 19" (17.9" Viewable Image Size), stealth black
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black

1. Netfinity 1000 includes a 330 W voltage sensing power supply.

2. Stated runtimes and power are for typical configurations (approximately 70% of maximum capacity). For additional information, see Appendix C: UPS Runtime Estimate.



### Netfinity 1000 Tape Options

Part Number	Description	Bays Supported	SCSI Interface (bit)	Form Factor	Termination Included	68/50-pin Converter Incl.	Ext. Tape Enclosures <sup>1</sup>
01K1282	12/24GB DDS/3 4-mm Internal Tape Drive	2	8	3.5" HH or 5.25" HH	Y <sup>2</sup>	Y	3510020
00N7991	20/40 GB DDS/4 4-mm Internal Tape Drive	2	16 Ultra2 LVD	3.5"HH or 5.25" HH	Y <sup>2</sup>	N	3510020
01K1319	10/20 GB NS Internal SCSI Tape Drive	2, 3	8	3.5" SL or 5.25" HH	Y <sup>2</sup>	Y	3510020
<b>Associated Options</b>							
32G3925	SCSI 68-pin to 50-pin Converter	-	8-16	Internal	N	Y	-
36L9636	Netfinity Two-Drop Internal SCSI Cable <sup>3</sup>	-	16	Internal	Y	N	-
<b>External Tape Enclosures</b>							
3510020	External Half High SCSI Storage Enclosure <sup>4</sup>	-	8/16	Desktop	N	N	-

1. To determine cable requirements, note the tape drive's SCSI interface, the appropriate SCSI controller from the system configurator section, and the desired enclosure, then refer to Appendix D: Cables - Storage Units - Controllers.

2. Tape drive is capable of self termination.

3. Netfinity Two-Drop Internal SCSI Cable (P/N 36L9636) is a wide two-drop terminated cable and is required for attachment of internal tape drives to the onboard SCSI controller of a Netfinity 1000 when the internal hard disk drives are attached to a RAID controller.

4. Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either tape drive self termination or SCSI-2 16-bit Active Terminator (P/N 32G3918).

NOTE: SCSI support is provided by system unit onboard (standard) controller (no RAID function) or PCI Fast Wide Ultra SCSI Adapter P/N 02K3454. Additional tape attributes can be found in Appendix A: Tape Drive Attributes.

### Sample Configurations

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

#### Workgroup Intranet Server

Part Number	Description	Quantity
8477-31Y	Netfinity 1000 (Pentium III 550/64 MB/0 GB)	1
01K1130	64 MB 100 MHz ECC SDRAM DIMM <sup>1</sup>	1
20L0553	9.1 GB Wide Ultra2 SCSI HDD	3
01K1319	10/20 GB NS Internal SCSI Tape Drive	1
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1
94G3135	APC Smart-UPS 1000	1

1. For a total of 128 MB of system memory.

An Internet server is a server that handles all requests from the Internet (Intranet or Extranet). Usually, this type of server has the same characteristics as a normal file server. The main difference is that an Internet server talks a different language (TCP/IP vs. NETBEUI or IPX/SPX) and often needs to do an extra security check (firewall). In the case of an Internet server, the server itself talks mostly to just one client, the Internet Service Provider (ISP), instead of many clients like a file server does.

With this in mind, the IBM Netfinity 1000 was selected to provide an affordable price point for the growing Internet server market with Pentium III processing, 128 MB of system memory (expandable to 768 MB), integrated 10/100 Ethernet controller, high-performance storage, and power protection with an APC Smart-UPS. The configuration includes a tape backup unit for secure backup of critical data in the event of a system or storage failure.

#### File and Print Server

Part Number	Description	Quantity
8477-11Y	Netfinity 1000 (Pentium II 400/64 MB/0 GB)	1
01K1130	64 MB 100 MHz ECC SDRAM DIMM <sup>1</sup>	1
20L0553	9.1 GB Wide Ultra2 SCSI HDD	1
01K1319	10/20 GB NS Internal SCSI Tape Drive	1
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1
94G3134	APC Smart-UPS 700	1

1. For a total of 128 MB of system memory.

A small business or departmental server is usually required to perform all typical server functions while servicing up to 50 users in a normal workgroup computing environment, but doesn't require the high-end performance and fault tolerance properties of larger servers.

The sample configuration above consists of an IBM Netfinity 1000 with 128 MB of memory and 9.1 GB of hard disk space. It has enough processor power and memory to run most current network operating systems comfortably and enough hard disk drive space to store a significant amount of data with additional internal storage expansion still available. Demanding network traffic is effectively handled by the standard 100 Mbps Ethernet connection. This configuration also includes a tape backup unit, monitor, and a UPS to keep the system protected from power surges and outages.



# IBM Netfinity 3000 Configurator

Part Number	Processor Speed (MHz)	Number of Processors (Std/Max)	L2 ECC Cache. (KB)	Memory (Std/Max) (R=RDIMM)	Form Factor	Power Supply Quantity (Std/Max)	Hot-Swap (Power, Slots, HDD, Fans)	Redundancy (Optional, Standard)	Adv. System Management (Mbps)	Onboard Ethernet (Mbps)	SCSI Controller (Dual, Ultra, RAID, LVD)	Removable Media Bays (Total/Avail)	Internal Hard Disk Drive (Std/Max)	CD-ROM (IDE)	Bays: (Total/Avail)	Slots (Total/Avail)
8476-50U	500 <sup>3</sup>	1/1	512	64/768 MB	Tower	1/1	- - -	10/100	U	4/2	72.8 GB	32X-14X <sup>1</sup>	6/4	6/5		
8476-51U	500 <sup>3</sup>	1/1	512	64/768 MB	Tower	1/1	- - -	10/100	U	4/2	91/72.8 GB <sup>2</sup>	32X-14X <sup>1</sup>	6/3	6/5		
8476-60U	550 <sup>3</sup>	1/1	512	64/768 MB	Tower	1/1	- - -	10/100	U	4/2	72.8 GB	40X-17X <sup>1</sup>	6/4	6/5		
8476-61U	550 <sup>3</sup>	1/1	512	64/768 MB	Tower	1/1	- - -	10/100	U	4/2	91/72.8 GB <sup>2</sup>	40X-17X <sup>1</sup>	6/3	6/5		
8476-70U	600 <sup>3</sup>	1/1	512	64/768 MB	Tower	1/1	- - -	10/100	U	4/2	72.8 GB	40X-17X <sup>1</sup>	6/4	6/5		
8476-71U	600 <sup>3</sup>	1/1	512	64/768 MB	Tower	1/1	- - -	10/100	U	4/2	91/72.8 GB <sup>2</sup>	40X-17X <sup>1</sup>	6/3	6/5		

1. Variable read rate. Actual playback speed will vary and is often less than the maximum possible.

2. Standard Hard Disk Drives (HDD) are 7200 RPM. Maximum internal capacities assume replacement of standard hard disk drives with the largest supported IBM hard disk drives.

3. Intel Pentium III processor.

## Netfinity 3000 Processor Upgrades

Part Number	Processor Upgrades with 512 KB Cache	Processor Speed Upgrade <sup>1</sup>
10L5886	Netfinity 300 MHz Upgrade with Pentium II Processor	10U, 11U
10L5883	Netfinity 350/100 MHz, 512KB Processor Upgrade with Pentium II Processor	All 1xU
10L5884	Netfinity 400/100 MHz, 512KB Processor Upgrade with Pentium II Processor	All 1...2xU
10L5900	Netfinity 450/100 MHz, 512KB Processor Upgrade with Pentium II Processor	All 1...3xU
36L9673	Netfinity 500 MHz/512 KB Upgrade with Pentium III Processor	All 1...4xU
33L5112	Netfinity 550 MHz/512 KB Upgrade with Pentium III Processor	All 1...5xU
33L5106	Netfinity 600 MHz/512 KB Upgrade with Pentium III Processor	All 1...6xU

1.Requires removal of the standard processor. A maximum of one processor may be installed. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access [www.ibm.com/pc/support](http://www.ibm.com/pc/support) and enter machine type "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".

## Netfinity 3000 Memory

DIMM Socket
DIMM Socket
DIMM Socket

Part Number	Memory Description
01K1133	32 MB 100 MHz ECC SDRAM DIMM
01K1130	64 MB 100 MHz ECC SDRAM DIMM
01K1131	128 MB 100 MHz ECC SDRAM DIMM
01K1132	256 MB 100 MHz ECC SDRAM RDIMM <sup>1</sup>

1. 01K1132 is a registered DIMM and is not compatible with 01K1130, 01K1131, or 01K1133. Installation of this RDIMM requires replacement of the standard DIMM.

Total Memory	All Models Except 15U
64 MB	64 MB DIMM Standard
128 MB	1 x 01K1130
192 MB	1 x 01K1131
256 MB	1 x 01K1131, 1 x 01K1130
320 MB	2 x 01K1131
384 MB	3 x 01K1131 <sup>1</sup>
512 MB	2 x 01K1132 <sup>1</sup>
768 MB (max)	3 x 01K1132 <sup>1</sup>

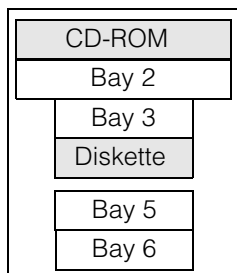
This table does not represent all possible memory configurations.

1. Replace standard DIMM.





## Netfinity 3000 Hard Disk Drive (HDD) Storage



Total Internal Storage <sup>1</sup>	Models x0U	Models x1U (except 21U)
0 GB	Standard	N/A
9.1 GB	1 x 20L0553	Standard
18.2 GB	2 x 20L0553 or 1 x 20L0554	1 x 20L0553
27.3 GB	3 x 20L0553	2 x 20L0553 or 1 x 20L0554
36.4 GB	4 x 20L0553 or 2 x 20L0554	3 x 20L0553
45.5 GB	2 x 20L0554, 1 x 20L0553	2 x 20L0554
54.6 GB	3 x 20L0554	1 x 20L0553, 2 x 20L0554
63.7 GB	3 x 20L0554, 1 x 20L0553	3 x 20L0554
72.8 GB (max)	4 x 20L0554	4 x 20L0554 <sup>2</sup>

This table does not represent all possible hard drive configurations.

1. Total Internal Storage listed is within  $\pm 0.2$  GB unless otherwise noted.

2. Requires replacement of standard hard disk drive with largest optional supported hard disk drive.

Bay	Form Factor	Height	Front Access	Usage	Part Number	Description	RPM	Height	Bays Supported	Max. Qty.
1	5.25"	HH	yes	IDE CD-ROM	<b>Internal Hard Disk Drives (HDD)</b>					
2	5.25" <sup>1</sup>	HH	yes	open	20L0553	9.1 GB Wide Ultra2 SCSI HDD <sup>1</sup>	7200	SL	2,3,5,6	4
3	3.5"	SL	yes	open	20L0554	18.2 GB Wide Ultra2 SCSI HDD <sup>1</sup>	7200	SL	2,3,5,6	4
4	3.5"	SL	yes	diskette	<b>External Storage Expansion Units<sup>2</sup></b>					
5	3.5"	SL <sup>2</sup>	no	HDD on Drive Models	35301RU	Netfinity EXP200 Storage Expansion Unit	<b>Form Factor</b>			
6	3.5"	SL <sup>2</sup>	no	open	37L5857	Netfinity EXP200 Rack-to-Tower Conversion Kit	Rack (3U)			
							-			

1. A 3.5" conversion kit is standard in Bay 2 for installation of 3.5" hard disk drives.

2. Two slim-line bays can be combined to support a single half-high device.

1. Performs as a Wide Ultra SCSI device when attached to the standard or an optional Wide Ultra SCSI adapter or when sharing a cable with a non-Ultra2 device.  
2. Not supported by the onboard external SCSI port. Select an optional SCSI controller then refer to see Appendix D: Cables-Storage Units-Controllers to confirm the controller supports the desired External Storage Expansion Unit and to select a supported cable. For HDD or other expansion unit options, see the specific expansion unit section.

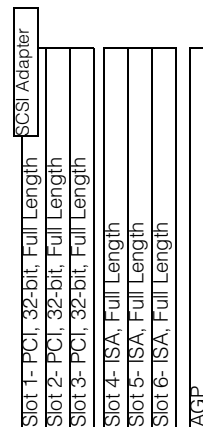
### Internal SCSI Cabling

Netfinity 3000 systems have an IBM PCI Fast/Wide Ultra SCSI Adapter and support up to four internal SCSI devices through the 16-bit internal connector or 15 external SCSI devices through the 16-bit external 68-pin High Density connector; however, when internal SCSI devices are installed to the internal connector, only one SCSI device can be supported from the external connector. All models are cabled internally with a four-drop, 16-bit wide SCSI cable with a built-in active terminator at one end. The other end is attached to the internal 68-pin single-ended connector of the SCSI adapter. On the drive models, the hard disk drive (HDD) is attached to the cable connector closest to the active terminator. On open bay models the first disk drive installed should be attached in the same manner. In the event the standard four drop cable is attached to a RAID controller and a dedicated removable media attachment to the onboard controller is required, an optional, terminated, 16-bit cable is available (Netfinity Two-Drop Internal SCSI Cable P/N 36L9636). If connecting narrow devices to this cable, additional 68-pin to 50-pin converters (P/N 32G3925) must be ordered. Some narrow devices include a converter in their ship group.



### Netfinity 3000 I/O Options

Part Number	Description	Adapter Length	PCI Support	Slots Supported
<b>Storage Controllers<sup>1</sup></b>				
01K7364	Netfinity ServeRAID-3L Ultra2 SCSI Adapter <sup>2,3</sup>	Full	32-bit	3
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter <sup>4</sup>	Full	32/64-bit	3
02K3454	PCI Fast/Wide Ultra SCSI Adapter	Half	32-bit	1, 2, 3
<b>Networking<sup>5</sup></b>				
<b>Ethernet</b>				
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2	Half	32-bit	1, 2, 3
08L3341	Netfinity 10/100 Fault Tolerant Adapter	Half	32-bit	1, 2, 3
34L0301	Netfinity Gigabit Ethernet SX Adapter	Half	32/64-bit	1, 2, 3
<b>Token Ring</b>				
34L0501	Token-Ring 100/16/4 High-Speed PCI Adapter	Half	32-bit	1, 2, 3
34L0601	Token-Ring 16/4 PCI Adapter 2	Half	32-bit	1, 2, 3
<b>Communications</b>				
33L4618	PCI V90 56 Data/Fax Modem <sup>6</sup>	Half	32-bit	1, 2, 3
37L1414	Serial I/O SST8P DB Adapter <sup>7</sup>	Half	32-bit	1, 2, 3
37L1415	Serial I/O SST16P RJ Adapter <sup>7</sup>	Half	32-bit	1, 2, 3
37L1423	Serial I/O SST16P DB Adapter <sup>7</sup>	Half	32-bit	1, 2, 3
<b>Systems Management<sup>8</sup></b>				
94G7578	PC Server Advanced Systems Management Adapter	Full	ISA	4, 5, 6
94G5571	Advanced Systems Management Power Unit <sup>9</sup>	-	-	-



1. Netfinity 3000 includes a single Wide Ultra SCSI PCI adapter.

2. All ServeRAID-3x adapters can be upgraded with the same enhanced software utilities and firmware included with ServeRAID-3HB. The download is available for no charge from [www.ibm.com/pc/support](http://www.ibm.com/pc/support). Select "Server" in Brand pulldown, "ServeRAID" in Family pulldown and then "Downloadable files". The upgrade should be considered for installations with firmware less than Version 3.5.

3. Netfinity ServeRAID-3L Ultra2 SCSI Adapter (P/N 01K7364) provides either one internal or one external LVDS SCSI channel.

4. Netfinity ServeRAID-3HB Ultra2 SCSI Adapter (P/N 37L6086) provides one internal and 2 external (0.8mm VHDCI) LVDS SCSI channels. The internal channel can be configured for external usage (0.8mm VHDCI) providing a total of 3 external LVDS SCSI channels. Includes 32 MB of mirrored battery-backup cache which helps protect against data loss in write-back cache mode in the event of a power outage or adapter maintenance.

5. Netfinity 3000 has an integrated 10/100 PCI Ethernet Controller.

6. Due to homologation variances, modem availability may differ by country.

7. See Appendix E for details on Serial I/O options and configuration limitations.

8. Netfinity 3000 provides the following integrated system management features - Vital Product Data (VPD) plus thermal, voltage and fan sensors. For additional functions, optional PC Server Advanced Systems Management Adapter (P/N 94G7578) may be utilized. To enable the adapter's Automated Restart and Alerting as well as Remote Power On/Off features, Advanced Systems Management Power Unit (P/N 94G5571) is required.

9. Provides continuous power to the PC Server Advanced Systems Management Adapter (P/N 94G7578) even when the system is powered off.

### Netfinity 3000 Power, Monitor & Accessories

Part Number	Description
<b>Power<sup>1</sup></b>	
<b>Uninterruptable Power Supply (UPS)<sup>2</sup></b>	
94G3134	APC Smart-UPS 700 (32 min. runtime at 160 Watts)
94G3135	APC Smart-UPS 1000 (51 min. runtime at 160 Watts)
<b>Monitors</b>	
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black
65474AN	G74 Color Monitor 17" (15.9" Viewable Image Size), stealth black
65494AN	G96 Color Monitor 19" (17.9" Viewable Image Size), stealth black
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black

1. Netfinity 3000 includes a 330 W voltage sensing power supply.

2. Stated runtimes and power are for typical configurations (approximately 70% of maximum capacity). For additional information, see Appendix C: UPS Runtime Estimate.

### Netfinity 3000 Tape Options

Part Number	Description	Bays Supported	SCSI Interface (bit)	Form Factor	Termination Included	68/50-pin Converter Incl.	Ext. Tape Enclosures <sup>1</sup>
01K1282	12/24GB DDS/3 4-mm Internal Tape Drive	2	8	3.5" HH or 5.25" HH	Y <sup>2</sup>	Y	3510020
00N7991	20/40 GB DDS/4 4-mm Internal Tape Drive	2	16 Ultra2 LVD	3.5" HH or 5.25" HH	Y <sup>2</sup>	N	3510020
01K1319	10/20 GB NS Internal SCSI Tape Drive	2, 3	8	3.5" SL or 5.25" HH	Y <sup>2</sup>	Y	3510020
<b>Associated Options</b>							
32G3925	SCSI 68-pin to 50-pin Converter	-	8-16	Internal	N	Y	-
36L9636	Netfinity Two-Drop Internal SCSI Cable <sup>3</sup>	-	16	Internal	Y	N	-
<b>External Tape Enclosures</b>							
3510020	External Half High SCSI Storage Enclosure <sup>4</sup>	-	8/16	Desktop	N	N	-

1. To determine cable requirements, note the tape drive's SCSI interface, the appropriate SCSI controller from the system configurator section, and the desired enclosure, then refer to Appendix D: Cables - Storage Units - Controllers.

2. Tape drive is capable of self termination.

3. Netfinity Two-Drop Internal SCSI Cable (P/N 36L9636) is a wide two-drop terminated cable and is required for attachment of internal tape drives to the onboard SCSI controller of a Netfinity 3000 when the internal hard disk drives are attached to a RAID controller.

4. Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either tape drive self termination or SCSI-2 16-bit Active Terminator (P/N 32G3918).

NOTE: SCSI support is provided by system unit onboard (standard) controller (no RAID function) or PCI Fast Wide Ultra SCSI Adapter P/N 02K3454. Additional tape attributes can be found in Appendix A: Tape Drive Attributes.

### Sample Configurations

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

#### Workgroup Intranet Server

Part Number	Description	Quantity
8476-71U	Netfinity 3000 (Pentium III 600/64 MB/91 GB)	1
01K1130	64 MB 100 MHz ECC SDRAM DIMM <sup>1</sup>	1
20L0553	9.1 GB Wide Ultra2 SCSI HDD	2
01K1319	10/20 GB NS Internal SCSI Tape Drive	1
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1
94G3135	APC Smart-UPS 1000	1

1. For a total of 128 MB of system memory.

An Internet server is a server that handles all requests from the Internet (Intranet or Extranet). Usually, this type of server has the same characteristics as a normal file server. The main difference is that an Internet server talks a different language (TCP/IP vs. NETBEUI or IPX/SPX) and often needs to do an extra security check (Firewall). In the case of an Internet server, the server itself talks mostly to just one client, the Internet Service Provider (ISP), instead of many clients like a file server does.

With this in mind, the IBM Netfinity 3000 was selected to provide an affordable price point for the growing Internet server market with Pentium III processing, 128 MB of system memory (expandable to 768 MB), integrated 10/100 Ethernet controller, and high-performance storage, and power protection with an APC Smart-UPS. The configuration includes a tape backup unit for secure backup of critical data in the event of a system or storage failure.

#### File and Print Server

Part Number	Description	Quantity
8476-50U	Netfinity 3000 (Pentium III 500/64 MB/0 GB)	1
01K1130	64 MB 100 MHz ECC SDRAM DIMM <sup>1</sup>	1
20L0553	9.1 GB Wide Ultra2 SCSI HDD	1
01K1319	10/20 GB NS Internal SCSI Tape Drive	1
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1
94G3134	APC Smart-UPS 700	1

1. For a total of 128 MB of system memory.

A small business or departmental server is usually required to perform all typical server functions while servicing up to 50 users in a normal workgroup computing environment, but doesn't require the high-end performance and fault tolerance properties of larger servers. The sample configuration above consists of an IBM Netfinity 3000 with 128 MB of memory and 9.1 GB of hard disk space. It has enough processor power and memory to run most current network operating systems comfortably and enough hard disk drive space to store a significant amount of data with additional internal storage expansion still available. Demanding network traffic is effectively handled by the standard 100 Mbps Ethernet connection. This configuration also includes a tape backup unit, monitor, and a UPS to keep the system protected from power surges and outages.



# IBM Netfinity 3500 M10 Configurator

Part Number	Processor Speed (MHz)	Number of Processors (Std/Max)	L2 ECC Cache (KB)	Memory (Std./Max.) (R=RDIMM)	Form Factor	Power Supply Quantity (Std/Max)	Hot-Swap (Power, HDD, Fans)	Redundancy (Optional, Standard)	Adv. System Management Process	Onboard Ethernet (Mbps)	SCSI Controller (Dual, Ultra, RAID, LVD)	Removable Media Bays (Total/Avail.)	Internal Hard Disk Drive (Std/Max)	CD-ROM (IDE)	Bays: (Total/Avail.)	Slots (Total/Avail.)
8655-11Y	500 <sup>2</sup>	1/2	512	64 MB/1 GB	Tower	1/1	-	-	-	10/100	U	4/2	72.8 GB	40X-17X <sup>1</sup>	6/4	6/5
8655-12Y	500 <sup>2</sup>	1/2	512	128 MB/1 GB	Tower	1/1	-	-	-	10/100	U	4/2	91/72.8 GB <sup>3</sup>	40X-17X <sup>1</sup>	6/3	6/5
8655-21Y	550 <sup>2</sup>	1/2	512	128 MB/1 GB	Tower	1/1	-	-	-	10/100	U	4/2	72.8 GB	40X-17X <sup>1</sup>	6/4	6/5
8655-22Y	550 <sup>2</sup>	1/2	512	128 MB/1 GB	Tower	1/1	-	-	-	10/100	U	4/2	91/72.8 GB <sup>3</sup>	40X-17X <sup>1</sup>	6/3	6/5
8655-31Y	600 <sup>2</sup>	1/2	512	128 MB/1 GB	Tower	1/1	-	-	-	10/100	U	4/2	72.8 GB	40X-17X <sup>1</sup>	6/4	6/5
8655-32Y	600 <sup>2</sup>	1/2	512	128 MB/1 GB	Tower	1/1	-	-	-	10/100	U	4/2	91/72.8 GB <sup>3</sup>	40X-17X <sup>1</sup>	6/3	6/5

1. Variable read rate. Actual playback speed will vary and is often less than the maximum possible.

2. Intel Pentium III processor.

3. Standard Hard Disk Drives (HDDs) are 7200 RPM. Maximum internal capacities assume replacement of standard hard disk drives with the largest supported IBM hard disk drives.

## Netfinity 3500 M10 Processor Upgrades

Part Number	Processor Upgrades with 512 KB Cache	SMP Support <sup>1</sup>	Processor Speed Upgrade <sup>2</sup>
36L9673	Netfinity 500 MHz/512 KB Upgrade with Pentium III Processor	All 1xY	-
33L5112	Netfinity 550 MHz/512 KB Upgrade with Pentium III Processor	All 2xY	All 1xY
33L5106	Netfinity 600 MHz/512 KB Upgrade with Pentium III Processor	All 3xY	All 1..2xY

1. One additional processor may be installed, providing a maximum of two. All processors must be identical in type, speed, and cache size.

2. Requires removal of the standard processor. A maximum of two processors may be installed. All processors must be identical in type, speed and cache size.

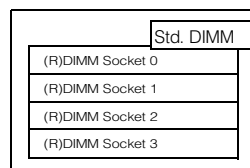
Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access [www.ibm.com/pc/support](http://www.ibm.com/pc/support) and enter machine type "Type-Model" in Quick Path.

Select "Downloadable files" and then "BIOS".

## Netfinity 3500 M10 Memory

Part Number	Memory Description
01K1130	64 MB 100 MHz ECC SDRAM DIMM
01K1131	128 MB 100 MHz ECC SDRAM DIMM
01K1132	256 MB 100 MHz ECC SDRAM Registered DIMM <sup>1</sup>

1. P/N 01K1132 is a registered DIMM and is not compatible with 01K1130 or 01K1131. Installation of this RDIMM requires replacement of the standard DIMM.





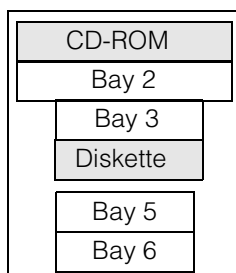
Total Memory	Model 11Y	All Models Except 11Y
64 MB	64 MB DIMM standard	-
128 MB	1 x 01K1130	128 MB DIMM standard
192 MB	1 x 01K1131	1 x 01K1130
256 MB	1 x 01K1131, 1 x 01K1130	1 x 01K1131 or 1 x 01K1132 <sup>1</sup>
320 MB	2 x 01K1131	1 x 01K1131, 1 x 01K1130
384 MB	2 x 01K1131, 1 x 01K1130	2 x 01K1131
448 MB	3 x 01K1131	2 x 01K1131, 1 x 01K1130
512 MB	4 x 01K1131 or 2 x 01K1132 <sup>2</sup>	3 x 01K1131 or 2 x 01K1132 <sup>1</sup>
768 MB	3 x 01K1132 <sup>1</sup>	3 x 01K1132 <sup>1</sup>
1024 MB (max)	4 x 01K1132 <sup>2</sup>	4 x 01K1132 <sup>2</sup>

This table does not represent all possible memory configurations.

1. P/N 01K1132 is a registered DIMM and is not compatible with 01K1130 or 01K1131. Installation of this RDIMM requires replacement of the standard DIMM.

2. Replace standard DIMM.

## Netfinity 3500 M10 Hard Disk Drive (HDD) Storage



Open Bay Examples <sup>2</sup>				
Total Internal Storage <sup>1</sup>	7,200 RPM Hard Disk Drives (HDDs)		10,000 RPM Hard Disk Drives (HDDs)	
	9.1 GB	18.2 GB	9.1 GB	18.2 GB
9.1 GB	1 x 20L0553	-	1 x 00N8071	-
18.2 GB	2 x 20L0553 or	1 x 20L0554	2 x 00N8071 or	1 x 00N8072
273 GB	3 x 20L0553	-	3 x 00N8071	-
36.4 GB	4 x 20L0553 or	2 x 20L0554	4 x 00N8071 or	2 x 00N8072
546 GB	-	3 x 20L0554	-	3 x 00N8072
72.8 GB (max)	-	4 x 20L0554	-	4 x 00N8072

This table does not represent all possible hard drive configurations.

1. Total Internal Storage listed is within  $\pm 0.2$ GB unless otherwise noted.

2. When configuring disk drive models (8655-x2Y) which include a single 9.1 GB 7200 RPM HDD, use the 9.1 GB 7200 RPM column and order one less 20L0553 than the table indicates.

Bay	Form Factor	Height	Front Access	Usage	Part Number	Description	RPM	Height	Bays Supported	Max Qty.
1	5.25"	HH	yes	IDE CD-ROM	<b>Internal Hard Disk Drives (HDD)</b>					
2	5.25" <sup>1</sup>	HH	yes	open	20L0553	9.1 GB Wide Ultra2 SCSI HDD <sup>1</sup>	7200	SL	2,3,5,6	4
3	3.5"	SL	yes	open	20L0554	18.2 GB Wide Ultra2 SCSI HDD <sup>1</sup>	7200	SL	2,3,5,6	4
4	3.5"	SL	yes	diskette	00N8071	9.1 GB 10,000 rpm Wide Ultra2 SCSI HDD <sup>1</sup>	10000	SL	2,3,5,6	4
5	3.5"	SL <sup>2</sup>	no	HDD on drive models	00N8072	18.2 GB 10,000 rpm Ultra2 SCSI HDD <sup>1</sup>	10000	SL	2,3,5,6	4
6	3.5"	SL <sup>2</sup>	no	open	<b>External Storage Expansion Units<sup>2</sup></b>					
							<b>Form Factor</b>			
35301RU						Netfinity EXP200 Storage Expansion Unit	Rack (3U)			
37L5857						Netfinity EXP200 Rack-to-Tower Conversion Kit	-			

1. A 3.5" conversion kit is standard in Bay 2 for installation of 3.5" hard disk drives.

2. Two slim-line (SL) bays can be combined to support a single half-high (HH) device.

1. Performs as a Wide Ultra SCSI device when attached to the standard or an optional Wide Ultra SCSI adapter or when sharing a cable with a non-Ultra2 device.

2. Not supported by the onboard external SCSI port. Select an optional SCSI controller then refer to see Appendix D: Cables-Storage Units-Controllers to confirm the controller supports the desired External Storage Expansion Unit and to select a supported cable. For HDD or other expansion unit options, see the specific expansion unit section.

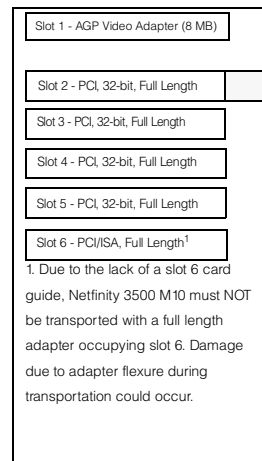
### Netfinity 3500 M10 Internal SCSI Cabling

Netfinity 3500 M10 systems are cabled internally with a four-drop, 16-bit wide SCSI cable with a built-in active terminator at one end of the cable. The other end of the cable is attached to the internal 68-pin single-ended connector of the dual channel Ultra SCSI controller. On drive models the hard disk drive is attached to the cable connector closest to the active terminator. On open bay models the first disk drive installed should be attached in the same manner to ensure the highest signal quality. In the event the standard four-drop cable is attached to a RAID controller and a dedicated removable media attachment to the onboard controller is required, an optional, terminated, 16-bit cable is available (Netfinity Two-Drop Internal SCSI Cable P/N 36L9636). If connecting narrow devices to this cable, additional 68-pin to 50-pin converters (P/N 32G3925) must be ordered. Some narrow devices include a converter in their ship group. The second Ultra SCSI channel is available for external device support through an external 68-pin high density connector.



## Netfinity 3500 M10 I/O Options

Part Number	Description	Adapter Length	PCI Support	Slots Supported
<b>Storage Controllers<sup>1</sup></b>				
01K7364	Netfinity ServeRAID-3L Ultra2 SCSI Adapter <sup>2, 3</sup>	Full	32-bit	3..6 <sup>5, 6</sup>
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter <sup>4</sup>	Full	32/64-bit	3..6 <sup>5, 6</sup>
02K3454	PCI Fast/Wide Ultra SCSI Adapter	Half	32-bit	2..6
<b>Networking<sup>7</sup></b>				
<b>Ethernet</b>				
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2	Half	32-bit	2..6
08L3341	Netfinity 10/100 Fault Tolerant Adapter	Half	32-bit	2..6
34L0301	Netfinity Gigabit Ethernet SX Adapter	Half	32/64-bit	3..6 <sup>6</sup>
<b>Token Ring</b>				
34L0501	Token-Ring 100/16/4 High-Speed PCI Adapter	Half	32-bit	2..6
34L0601	Token-Ring 16/4 PCI Adapter 2	Half	32-bit	2..6
<b>Communications<sup>8</sup></b>				
33L4618	PCI V90 56 Data/Fax Modem <sup>9</sup>	Half	32-bit	2..6
37L1414	Serial I/O SST8P DB Adapter <sup>10</sup>	Half	32-bit	2..6 <sup>10</sup>
37L1415	Serial I/O SST16P RJ Adapter <sup>10</sup>	Half	32-bit	2..6 <sup>10</sup>
37L1423	Serial I/O SST16P DB Adapter <sup>10</sup>	Half	32-bit	2..6 <sup>10</sup>
37L1416	Serial I/O SST128P Expandable Adapter <sup>10</sup>	Half	32-bit	2..6 <sup>10</sup>
<b>Systems Management<sup>11</sup></b>				



- Netfinity 3500 M10 has two integrated Wide Ultra SCSI channels. One is internal and the other is external with a 68-pin high density connector.
- All ServeRAID-3x adapters can be upgraded with the same enhanced software utilities and firmware included with ServeRAID-3HB. The download is available for no charge from [www.ibm.com/pc/support](http://www.ibm.com/pc/support). Select "Server" in the Brand pulldown, "ServeRAID" in the Family pulldown and then "Downloadable files". The upgrade should be considered for installations with firmware less than Version 3.5.
- Netfinity ServeRAID-3L Ultra2 SCSI Adapter (P/N 01K7364) provides either one internal or one external (0.8-mm VHDCI) LVDS SCSI channel.
- Netfinity ServeRAID-3HB Ultra2 SCSI Adapter (P/N 37L6086) provides one internal and two external (0.8-mm VHDCI) LVDS SCSI channels. The internal channel can be configured for external usage (0.8-mm VHDCI connector) providing a total of three external LVDS SCSI channels. Includes 32 MB of mirrored battery backup cache, which helps protect against data loss in write-back cache mode in the event of a power outage or adapter maintenance.
- Due to the lack of a slot 6 card guide, Netfinity 3500 M10 must NOT be transported with a full length adapter occupying slot 6. Damage due to adapter flexure during transportation could occur.
- Slot 2 will not support installation of a RAID or 64-bit PCI adapter.
- Netfinity 3500 M10 has an integrated 10/100 PCI Ethernet Controller.
- Netfinity 3500 M10 includes two USB ports, two high-speed, NS16550A software-compatible serial ports, and one high-speed parallel port supporting devices using SSP/EPP/ECP protocols adhering to the IEEE 1284 standard.
- Due to homologation variances, modem availability may differ by country.
- See Appendix E for details on Serial I/O options and configuration limitations. A maximum of four Serial I/O adapters (any combination of P/N 37L1414, 37L1415, 37L1416, and 37L1423) may be installed.
- Netfinity 3500 M10 integrated system management features include Vital Product Data (VPD) and alerts generated through Netfinity Manager from thermal, voltage and fan sensors.

## Netfinity 3500 M10 Power, Monitor & Accessories

Part Number	Description
<b>Power<sup>1</sup></b>	
<b>Uninterrupted Power Supply (UPS)<sup>2</sup></b>	
94G3134	APC Smart-UPS 700 (20 min. runtime at 210 Watts)
94G3135	APC Smart-UPS 1000 (36 min. runtime at 210 Watts)
<b>Monitors</b>	
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black
65474AN	G74 Color Monitor 17" (15.9" Viewable Image Size), stealth black
65494AN	G96 Color Monitor 19" (17.9" Viewable Image Size), stealth black
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black

- Netfinity 3500 includes a 330 W voltage sensing power supply.
- Stated runtimes and power are for typical configurations (approximately 70% of maximum capacity). For additional information, see Appendix C: UPS Runtime Estimate.



### Netfinity 3500 M10 Tape Options

Part Number	Description	Bays Supported	SCSI Interface (bit)	Form Factor	Termination Included	68/50-pin Converter Incl.	Ext. Tape Enclosures <sup>1</sup>
01K1319	10/20 GB NS Internal SCSI Tape Drive	2,3	8	3.5" SL or 5.25" HH	Y <sup>2</sup>	Y	3510020, 3551001
01K1325	20/40 GB 8-mm Internal SCSI Tape Drive	2	16	5.25" HH	N <sup>3</sup>	N	3510020, <sup>4</sup> 3551001
00N7990	40/80 GB DLT Internal SCSI Tape Drive	N/A <sup>5</sup>	16 LVD	5.25" FH	N	N	3503BOX, <sup>4</sup> 3551001
<b>Associated Options</b>							
32G3918	SCSI-2 16-bit Active Terminator	-	16	External	Y	N	3510020
32G3925	SCSI 68-pin to 50-pin Converter	-	8-16	Internal	N	Y	3551001
36L9636	Netfinity Two-Drop Internal SCSI Cable <sup>6</sup>	-	16	Internal	Y	N	-
<b>External Tape Enclosures</b>							
3510020	External Half High SCSI Storage Enclosure <sup>7</sup>	-	8/16	Desktop	N	N	-
3551001	NetMEDIA Storage Expansion Unit EL <sup>8</sup>	-	16	Rack	Y	N	-
10L7113	NetMEDIA Systems Management Adapter <sup>9</sup>	-	16	-	N	N	3551001
3503BOX	DLT External SCSI Enclosure <sup>10</sup>	-	16	Desktop	N	N	-

1. To determine cable requirements, note the tape drive's SCSI interface, the appropriate SCSI controller from the system configurator section, and the desired enclosure, then refer to Appendix D: Cables-Storage Units-Controllers.
2. Tape drive is capable of self termination.
3. Termination is provided by the system unit's standard 4-drop SCSI cabling.
4. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).
5. Netfinity 3500 M10 does not support full high devices internally. See External Tape Enclosure column.
6. Netfinity Two-Drop Internal SCSI Cable (P/N 36L9636) is a wide two-drop terminated cable and is required for attachment of internal tape drives to the onboard SCSI controller of a Netfinity 3500 M10 when the hard disk drives are attached to a RAID Controller.
7. Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either tape drive self termination or SCSI-2 16-bit Active Terminator (P/N 32G3918).
8. Provides a black 3U, 19" rack or NetBAY3 mountable tape enclosure. Provides two full high (FH) or four half high (HH) extended length 5.25" bays. External connector is 0.8-mm VHDCI. Includes two power supplies and two power cords.
9. Installs in a 3551001. Provides repeater function and LVDS interface allowing longer cable lengths and auto-termination when the 3551001 is powered off.
10. Provides a black desktop DLT tape enclosure with a 68-pin high density external connector. Requires termination by the tape drive or by installation of a SCSI-2 16-bit Active Terminator (P/N 32G3918).

NOTE: SCSI support for tape drives is provided by system unit onboard (standard) controller (no-RAID function) or PCI Fast Wide Ultra SCSI Adapter P/N 02K3454. Additional tape attributes can be found in Appendix A: Tape Drive Attributes.

### Sample Configurations

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

#### Internet Server

Part Number	Description	Quantity
8655-22Y	Netfinity 3500 M10 (Pentium III 550/128 MB/91 GB)	1
01K1131	128 MB 100 MHz ECC SDRAM DIMM <sup>1</sup>	1
20L0553	91 GB Wide Ultra2 SCSI HDD <sup>2</sup>	2
01K1319	10/20 GB NS Internal SCSI Tape Drive	1
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1
94G3134	APC Smart-UPS 700	1

1. For a total of 256 MB of system memory.
2. For a total of 273 GB of internal storage.

An Internet server is a server that handles all requests from the Internet (Intranet or Extranet). Usually, this type of server has the same characteristics as a normal file server. The main difference is that an Internet server talks a different language (TCP/IP vs. NETBEUI or IPX/SPX) and often needs to do an extra security check (Firewall). In the case of an Internet server, the server itself talks mostly to just one client, the Internet Service Provider (ISP), instead of many clients like a file server does.

With this in mind, the IBM Netfinity 3500 M10 was selected to provide an affordable price point for the growing Internet server market with two-way Pentium III processing, 256 MB of system memory (expandable to 1 GB), and power protection with an APC Smart-UPS.

The network configuration depends on the method that will be used to connect the server to the Internet. Usually fast Ethernet routers are used, but if other methods are used, you can add the appropriate adapter. The configuration includes a tape backup unit for secure backup of critical data in the event of a system or storage failure.



### File and Print Server

Part Number	Description	Quantity
8655-11Y	Netfinity 3500 M10 (Pentium III 500/64 MB/0 GB)	1
01K1131	128 MB 100 MHz ECC SDRAM DIMM <sup>1</sup>	1
20L0554	18.2 GB Wide Ultra2 SCSI HDD <sup>2</sup>	3
01K1325	20/40 GB 8-mm Internal SCSI Tape Drive	1
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size) stealth black	1
94G3134	APC Smart-UPS 700	1

1. For a total of 192 MB of system memory

2. For a total of 546 GB of internal storage.

A small business or departmental server is usually required to perform all typical server functions while servicing up to 100 users in a normal workgroup computing environment, but doesn't require the high-end performance and fault tolerance properties of larger servers.

The sample configuration above consists of an IBM Netfinity 3500 M10 with 192 MB of memory and 546 GB of hard disk space. It has enough processor power and memory to run most current network operating systems comfortably and enough hard disk drive space to store a significant amount of data with additional external storage expansion still available. Demanding network traffic is effectively handled by the standard 100 Mbps Ethernet connection.

This configuration also includes a tape backup unit, monitor, and a UPS to keep the system protected during power surges and outages

### Application Server

Part Number	Description	Quantity
8655-32Y	Netfinity 3500 M10 (Pentium III 600/128 MB/91 GB)	1
33L5106	Netfinity 600 MHz/512 KB Upgrade with Pentium III Processor	1
01K1132	256 MB 100 MHz ECC SDRAM Registered DIMM <sup>1</sup>	1
01K7364	Netfinity ServeRAID-3L Ultra2 SCSI Adapter	1
36L9636	Netfinity Two-Drop Internal SCSI Cable	1
20L0553	9.1 GB Wide Ultra2 SCSI HDD <sup>2</sup>	2
01K1319	10/20 GB NS Internal SCSI Tape Drive	1
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1
94G3134	APC Smart-UPS 700	1

1. For a total of 256 MB of registered system memory. Requires removal of standard memory.

2. For a total of 273 GB of internal storage .

An application server differs from a file server and print server in that it has a higher workload, in providing application serving requirements for users. With this in mind, the IBM Netfinity 3500 M10 was selected to provide an affordable price point for an application server, with two-way Pentium III processing, 256 MB of system memory (expandable to 1 GB), and availability features such as RAID protected internal storage and power protection with an APC Smart-UPS.







# IBM Netfinity 4000R Configurator

Part Number	Processor Speed (MHz)	Number of Processors (Std/Max) <sup>1</sup>	L2 ECC Cache. (KB)	Memory (Std/Max) R-RDIMM) <sup>1</sup>	Form Factor	Power Supply Quantity (Std/Max)	Hot-Swap (Power, Slots, HDD, Fans)	Redundancy (Optional, Standard)	Adv. System Management Processor	Onboard Ethernet (mbps)	SCSI Controller (Dual, Ultra, RAID, LVD)	Removable Media Bays (Total/Avail)	Internal Hard Disk Drive (Std/Max) <sup>1</sup>	CD-ROM (IDE)	Bays: (Total/Avail) <sup>1</sup>	Slots: (Total/Avail) <sup>1</sup>
8652-11Y <sup>2,3</sup>	500 <sup>4</sup>	1/2	512	256MB/2GB	Rack(1U)	1/1	-	-	-	2 x10/100	U	1/0	9.1/36.4GB <sup>5</sup>	24X-10X <sup>6</sup>	3/1	2/1
8652-21Y <sup>2,3</sup>	500 <sup>4</sup>	2/2	512	512MB/2GB	Rack(1U)	1/1	-	-	-	2 x10/100	U	1/0	18.2/36.4GB <sup>5</sup>	24X-10X <sup>6</sup>	3/0	2/1
8652-22Y <sup>2,3</sup>	500 <sup>4</sup>	2/2	512	1GB/2GB	Rack(1U)	1/1	-	-	-	2 x10/100	U	1/0	18.2/36.4GB <sup>5</sup>	24X-10X <sup>6</sup>	3/0	2/1

1. The Netfinity 4000R does not support customer installation of adapters, HDDs, memory, processors, or any other devices that must be installed inside the server. Non-standard features must be installed at the factory. Contact your IBM Marketing Representative for more information.

2. Available in the US only.

3. Requires Console Cable Set P/N 94G7447 and an available console switch port. Housed in a 19" rack mountable drawer and ships standard without a keyboard or mouse. See "Rack and NetBay" under "Netfinity 4000R Power, Monitor & Accessories" for supported IBM racks.

4. Intel Pentium III processor

5. Standard Hard Disk drives (HDD) are 7200 RPM. Maximum internal capacities assume factory replacement of standard hard disk drives with the largest supported IBM hard disk drives.

6. Variable read rate. Actual playback speed will vary and is often less than the maximum possible.

## Netfinity 4000R Processor Upgrades

Part Number	Processor Upgrades with 512KB Cache	SMP Support
N/A <sup>1</sup>	Netfinity 500 MHz/512 KB Upgrade with Pentium III Processor	All 1xY <sup>2</sup>

1. The Netfinity 4000R does not support customer installation of adapters, HDDs, memory, processors, or any other devices that must be installed inside the server. Non-standard features must be installed at the factory. Contact your IBM Marketing Representative for more information.

2. One additional processor may be installed, providing a maximum of two. All processors must be identical in type, speed and cache size.

## Netfinity 4000R Memory

RDIMM Socket
RDIMM Socket
RDIMM Socket
RDIMM Socket

Part Number	Memory Description
N/A <sup>1</sup>	128MB 100MHz ECC SDRAM RDIMM
N/A <sup>1</sup>	256MB 100MHz ECC SDRAM RDIMM
N/A <sup>1</sup>	512MB 100MHz ECC SDRAM RDIMM

1. The Netfinity 4000R does not support customer installation of adapters, HDDs, memory, processors, or any other devices that must be installed inside the server. Non-standard features must be installed at the factory. Contact your IBM Marketing Representative for more information.



### Netfinity 4000R Hard Disk Drive (HDD) Storage

Bay	Form Factor	Height	Front Access	Usage	Part Number	Description	RPM	Height
1	5.25"	SL	yes	IDE CD-ROM	<b>Internal Hard Disk Drives (HDD)</b>			
2 <sup>1</sup>	3.5"	SL	no	open/HDD	N/A <sup>1</sup>	91GB 7200 RPM SCSI HDD	7200	SL
3 <sup>1</sup>	3.5"	SL	no	Std HDD	N/A <sup>1</sup>	18.2GB 7200 RPM SCSI HDD	7200	SL

1. The Netfinity 4000R does not support customer installation of adapters, HDDs, memory, processors, or any other devices that must be installed inside the server. Non-standard features must be installed at the factory. Contact your IBM Marketing Representative for more information.

1. A maximum of two SL HDDs may be installed. The Netfinity 4000R does not support customer installation of adapters, HDDs, memory, processors, or any other devices that must be installed inside the server. Non-standard features must be installed at the factory. Contact your IBM Marketing Representative for more information.

### Internal SCSI Cabling

Netfinity 4000R servers contain a single channel Wide Ultra SCSI adapter that has two 68-pin connectors to support SCSI device attachment. One connector supports 16-bit internal SCSI devices, while the other supports a 16-bit external device. Up to two Wide Ultra SCSI HDDs can be supported internally. External support is limited to one SCSI device. Non-standard features must be installed at the factory. Contact your IBM Marketing Representative for more information.

### Netfinity 4000R I/O Options

Part Number	Description
<b>Storage Controllers<sup>2</sup></b>	
N/A <sup>1</sup>	Netfinity ServeRAID-3L Ultra2 SCSI Adapter (i channel)
N/A <sup>1</sup>	PCI Fast/Wide Ultra SCSI Adapter (1 channel)
N/A <sup>1</sup>	Ultra SCSI Adapter (2 channel)
N/A <sup>1</sup>	Ultra2 SCSI Adapter (1 channel)
<b>Networking<sup>3</sup></b>	
N/A <sup>1</sup>	Netfinity 10/100 Ethernet PCI Adapter 2
N/A <sup>1</sup>	Netfinity Gigabit Ethernet SX Adapter

1. The Netfinity 4000R does not support customer installation of adapters, HDDs, memory, processors, or any other devices that must be installed inside the server. Non-standard features must be installed at the factory. Contact your IBM Marketing Representative for more information.

2. Netfinity 4000R contains a single channel Wide Ultra SCSI adapter with an internal 68-pin connector supporting up to two internal HDDs and an external 68-pin high density connector for attachment of a single external SCSI device.

3. Netfinity 4000R contains two integrated 10/100 PCI Ethernet controllers.



## Netfinity 4000R Power, Monitor & Accessories

Part Number	Description
<b>Power<sup>1</sup></b>	
6952301	6 ft US (Chicago) Power Cord <sup>2</sup>
6952300	9-foot Power Cord <sup>2</sup>
94G6667	Power Cable Type A14 (4.3m, 14 ft.) <sup>2</sup>
94G7448	Power Cable Type C12 (3.7m, 12 ft.) <sup>3</sup>
<b>Power Distribution Units (PDU)</b>	
94G6666	100-120V Power Distribution Unit <sup>4</sup>
94G7450	200-240V Power Distribution Unit <sup>5</sup>
<b>Uninterruptible Power Supply (UPS)</b>	
94G6674	APC Smart-UPS 1400RMB <sup>6</sup>
94G6676	APC Smart-UPS 3000RMB <sup>7</sup>
<b>Monitors<sup>8</sup></b>	
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black <sup>9</sup>
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black <sup>10</sup>
<b>Rack and NetBay<sup>11</sup></b>	
930842P	Netfinity Enterprise Rack
930842X	Netfinity Enterprise Expansion Cabinet
9306900	Netfinity Rack <sup>12</sup>
36L9703	Netfinity Rack Extension Kit
9306200	Netfinity NetBAY <sup>12</sup>
36L9702	NetBAY22 Rack Extension Kit
<b>Keyboard and Mouse<sup>13</sup></b>	
28L3644	Space Saver II Keyboard <sup>14, 16</sup>
01K1260	TrackPoint IV 104-key Black Keyboard <sup>15, 16</sup>
28L3621	Preferred Keyboard (stealth black) <sup>15</sup>
28L3673	Sleek 2-Button Stealth Black Mouse
<b>Console Options<sup>8</sup></b>	
94G7445	Console Server Selector Switch (8-port)
28L0542	Netfinity Console Server Selector Switch (4-port)
94G7447	Console Cable Set - 12 ft. (3.66m)

1. Netfinity 4000R includes a single 150W power supply and a single 2.8 m (9 ft.) power cord with an IEC 320-C14 connector on the outlet end.

2. For attachment to UPS part number 94G6674 or 94G6676, PDU part number 94G6666 or other NEMA 5-15R outlet.

3. For attachment to PDU part number 94G7450 or other IEC 320-C13 outlet.

4. Requires optional power cord 6952301, 6952300 or 94G6667. Contains eight NEMA 5-15R outlets and one communication link. Supports up to 12 amps.

5. Contains ten IEC 320-C13 outlets and three communication links. Supports up to 16 amps.

6. Requires optional power cord 6952301, 6952300 or 94G6667. Height is 3U. See "Rack and NetBAY" for supported IBM racks. Contains six NEMA 5-15R outlets.

7. Requires optional power cord 6952301, 6952300 or 94G6667. Height is 3U. See "Rack and NetBAY" for supported IBM racks. Contains eight NEMA 5-15R outlets.

8. A single Console Cable Set (P/N 947447) and an available port on a console switch is required for each Netfinity 4000R.

9. Installation within a rack requires optional Monitor Compartment (P/N 94G7444).

10. Installation within a rack requires optional Netfinity Flat Panel Monitor Rack Mount Kit (P/N 37L6857) and Netfinity Rack Keyboard Tray (P/N 28L4707). A space saver keyboard may coexist within the same 28L4707 keyboard tray.

11. Netfinity 4000R is housed in a 19" rack mountable drawer and requires one of the racks listed here. See IBM Netfinity Rack cabinet and Options section for IBM rack supported devices. To provide adequate cooling, rack front door must be removed.

12. Rack Extension kits 36L9703 and 36L9702 are recommended for 9306900 and 9306200 respectively, to provide sufficient room for cable management.

13. Netfinity 4000R does not include a keyboard or mouse.

14. Installation within a rack requires optional keyboard tray P/N 28L4707 (stows in "ready-to-use" position).

15. Installation within a rack requires optional keyboard tray P/N 28L4707. This keyboard cannot share a keyboard tray with a flat panel display.

16. Advanced TrackPoint IV features are not available on IBM Netfinity systems.





# IBM Netfinity 5000 Configurator

Part Number	Processor Speed (MHz)	Number of Processors (Std/Max)	L2 ECC Cache (KB)	Memory(Std/Max) (R = RDIMM)	Form Factor	Power Supply Quantity (Std/Max)	Hot-Swap (Power, Slots, HDD, Fans)	Redundancy (Optional, Standard)	Adv. System Management Processor	Onboard Ethernet (Mbps)	SCSI Controller (Dual, Ultra, RAID, LVD)	Removable Media Bays (Total/Avail)	Internal Hard Disk Drive (Std/Max)	CD-ROM (IDE)	Bays: (Total/Avail)	Slots: (Total/Avail)
8659-41Y	500 <sup>4</sup>	1/2	512	128 MB <sup>R</sup> /2 GB	Tower	1/2	H	S-Power <sup>2</sup>	Y	10/100	D,U	3/1	0/91 GB	32X- 14X <sup>3</sup>	8/6	5/5
8659-4RY <sup>1</sup>	500 <sup>4</sup>	1/2	512	128 MB <sup>R</sup> /2 GB	Rack(5U)	1/2	H	S-Power <sup>2</sup>	Y	10/100	D,U	3/1	0/91 GB	32X- 14X <sup>3</sup>	8/6	5/5
8659-51Y	550 <sup>4</sup>	1/2	512	128 MB <sup>R</sup> /2 GB	Tower	1/2	H	S-Power <sup>2</sup>	Y	10/100	D,U	3/1	0/91 GB	32X- 14X <sup>3</sup>	8/6	5/5
8659-5RY <sup>1</sup>	550 <sup>4</sup>	1/2	512	128 MB <sup>R</sup> /2 GB	Rack(5U)	1/2	H	S-Power <sup>2</sup>	Y	10/100	D,U	3/1	0/91 GB	32X- 14X <sup>3</sup>	8/6	5/5
8659-61Y	600 <sup>4</sup>	1/2	512	128 MB <sup>R</sup> /2 GB	Tower	1/2	H	S-Power <sup>2</sup>	Y	10/100	D,U	3/1	0/91 GB	32X- 14X <sup>3</sup>	8/6	5/5
8659-6RY <sup>1</sup>	600 <sup>4</sup>	1/2	512	128 MB <sup>R</sup> /2 GB	Rack(5U)	1/2	H	S-Power <sup>2</sup>	Y	10/100	D,U	3/1	0/91 GB	32X- 14X <sup>3</sup>	8/6	5/5

1. Housed in a 19" Rack mountable drawer and ships standard without a keyboard or mouse. See "Rack and NetBay" under "Netfinity 5000 Power, Monitor & Accessories" for supported IBM racks.

2. Robust configurations may require optional Netfinity 175W Redundant Power Supply (P/N 10L7007) for redundancy. See the Netfinity 5000 Power Supply Redundancy Requirements table for additional information.

3. Variable read rate. Actual playback speed will vary and is often less than the maximum possible.

4. Intel Pentium III processor.

## Netfinity 5000 Processor Upgrades

Part Number	Processor Upgrades with 512 KB Cache	SMP Support <sup>1</sup>	Processor Speed Upgrade <sup>2</sup>
10L5883	Netfinity 350/100 MHz, 512 KB Processor Upgrade with Pentium II Processor	All 1xY	-
10L5884	Netfinity 400/100 MHz, 512 KB Processor Upgrade	All 2xY	All 1xY
10L5900	Netfinity 450/100 MHz, 512 KB Processor Upgrade with Pentium II Processor	All 3xY	All 1...2xY
36L9673	Netfinity 500 MHz/512 KB Upgrade with Pentium III Processor	All 4xY	All 1...3xY
33L5112	Netfinity 550 MHz/512 KB Upgrade with Pentium III Processor	All 5xY	All 1...4xY
33L5106	Netfinity 600 MHz/512 KB Upgrade with Pentium III Processor	All 6xY	-

1. One additional processor may be installed, providing a maximum of two. All processors must be identical in type, speed, and cache size.

2. Requires removal of the standard processor. A maximum of two processors may be installed. All processors must be identical in type, speed and cache size. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access [www.ibm.com/pc/support](http://www.ibm.com/pc/support) and enter machine "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".



### Netfinity 5000 Memory

RDIMM Socket - J15	Std. RDIMM
RDIMM Socket - J16	
RDIMM Socket - J17	
RDIMM Socket - J22	

Part Number	Memory Description
01K7241	Netfinity 64 MB SDRAM ECC RDIMM
01K7262	Netfinity 128 MB SDRAM ECC RDIMM
01K8043	Netfinity 256 MB SDRAM ECC RDIMM
01K7263	Netfinity 512 MB SDRAM ECC RDIMM

Total Memory <sup>1</sup>	Models 1...3xY	Model 4...6xY
64 MB	64 MB RDIMM Standard	-
128 MB	1 x 01K7241	128 MB RDIMM Standard
192 MB	1 x 01K7262	1 x 01K7241
256 MB	1 x 01K7262, 1 x 01K7241	1 x 01K7262
320 MB	1 x 01K8043	1 x 01K7262, 1 x 01K7241
384 MB	1 x 01K8043, 1 x 01K7241	1 x 01K8043
512 MB	1 x 01K8043, 1 x 01K7262, 1 x 01K7241	1 x 01K8043, 1 x 01K7262
576 MB	1 x 01K7263	-
640 MB	1 x 01K7263, 1 x 01K7241	1 x 01K7263
1088 MB	2 x 01K7263	-
1152 MB	2 x 01K7263, 1 x 01K7241	2 x 01K7263
1600 MB	3 x 01K7263	-
1664 MB	-	3 x 01K7263
2048 MB (max)	4 x 01K7263 <sup>2</sup>	4 x 01K7263 <sup>2</sup>

This table does not represent all possible memory configurations.

1. Network Operating Systems may limit the maximum amount of addressable memory. See operating system specifications for further information.

2. Replace standard RDIMM.

### Netfinity 5000 Hard Disk Drive (HDD) Storage

Total Int. Storage <sup>1</sup>	7200RPM Hard Disk Drives (HDDs)			10,000RPM Hard Disk Drives (HDDs)		
	9.1 GB	18.2 GB	36.4 GB	9.1 GB	18.2 GB	36.4 GB
0 GB	Standard on Base Models			Standard on Base Models		
9.1 GB	1 x 01K8053	-	-	1 x 36L9806	-	-
18.2 GB	2 x 01K8053 or	1 x 02K0440	-	2 x 36L9806 or	1 x 36L9807	-
27.2 GB	3 x 01K8053	-	-	3 x 36L9806	-	-
36.4 GB	4 x 01K8053 or	2 x 02K0440 or	1 x 02K0441	4 x 36L9806 or	2 x 36L9807 or	1 x 36L9808
45.5 GB	5 x 01K8053	-	-	5 x 36L9806	-	-
54.6 GB	-	3 x 02K0440	-	-	3 x 36L9807	-
72.8 GB	-	4 x 02K0440 or	2 x 02K0441	-	4 x 36L9807 or	2 x 36L9808
91 GB (max)	-	5 x 02K0440	-	-	5 x 36L9807	-

This table does not represent all possible hard drive configurations.

1. Total Internal Storage listed is within ± 0.2 GB unless otherwise noted.



Bay	Form Factor	Height	Front Access	Usage	Part Number	Description	RPM	Height	Bays Supported	Max. Qty.
A	5.25"	HH <sup>1</sup>	Yes	Open <sup>2</sup>	<b>Internal Hard Disk Drives (HDD)</b>					
B	5.25"	HH <sup>1</sup>	Yes	IDE CD-ROM	01K8053	Netfinity 91 GB Wide Ultra SCSI SCA-2 SL HDD	7200	SL	1..5	5
C	3.5"	SL	Yes	Diskette	02K0440	Netfinity 18.2 GB Wide Ultra SCSI Hot-Swap SL HDD	7200	SL	1..5	5
1..5	HS <sup>1</sup>	SL <sup>3</sup>	Yes	Open	02K0441	Netfinity 36.4 GB Wide Ultra SCSI Hot-Swap HDD	7200	HH <sup>1</sup>	1/2, 2/3, 3/4, 4/5	2

1. Definitions: Half High (HH), Slim-Line (SL), Hot-Swap (HS)  
2. Removable Media (RM) devices only.  
3. Two slim-line (SL) can be combined to support a single half-high device.

Bay A				Diskette
CD-ROM				
Bay 1	Bay 2	Bay 3	Bay 4	Bay 5

36L9806	Netfinity 91 GB 10K-3 Wide Ultra SCSI Hot-Swap SL HDD	10,000	SL	1..5	5
36L9807	Netfinity 18.2 GB 10K-3 Wide Ultra SCSI Hot-Swap SL HDD	10,000	SL	1..5	5
36L9808	Netfinity 36.4 GB 10K-3 Wide Ultra SCSI Hot-Swap HDD	10,000	HH <sup>1</sup>	1/2, 2/3, 3/4, 4/5	2
<b>External Storage Expansion Units<sup>2</sup></b>		<b>Form Factor</b>			
35202RU	Netfinity EXP15 Storage Expansion Unit	Rack (3U)			
35301RU	Netfinity EXP200 Storage Expansion Unit	Rack (3U)			
37L5857	Netfinity EXP200 Rack-to-Tower Conversion Kit	-			

1. Two slim-line (SL) bays can be combined to support a single half-high (HH) device.  
2. Not supported by the onboard external SCSI port. Select an optional SCSI controller then refer to see Appendix D: Cables-Storage Units-Controllers to confirm the controller supports the desired External Storage Expansion Unit and to select a supported cable. For HDD or other expansion unit options, see the specific expansion unit section.

### Internal SCSI Cabling

Netfinity 5000 systems contain a backplane supporting five hot-swap drive bays. The backplane has an integrated SCSI terminator and is connected to one of the two integrated dual-channel SCSI controller connectors by a two drop 16-bit SCSI cable. The second drop is available for supporting an internal removable media device. In the event the standard two drop cable is attached to a RAID controller and a dedicated removable media attachment to the onboard controller is required, an optional, terminated, 16-bit cable is available (Netfinity Two-Drop Internal SCSI Cable P/N 36L9636). The second SCSI channel is available for external device attachment through a rear panel 68-pin high density connector.





## Netfinity 5000 I/O Options

Part Number	Description	Adapter Length	PCI Support	Slots Supported
<b>Storage Controllers<sup>1</sup></b>				
01K7364	Netfinity ServeRAID-3L Ultra2 SCSI Adapter <sup>2, 3</sup>	Full	32-bit	1..5
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter <sup>4</sup>	Full	32/64-bit	1..5
02K3454	PCI Fast/Wide Ultra SCSI Adapter	Half	32-bit	1..5
01K7297	Netfinity Fibre Channel PCI Adapter <sup>5</sup>	Half	32/64-bit	1..5
09L2123	Advanced SerialRAID/X Adapter <sup>6</sup>	Full	32-bit	1..5 <sup>7</sup>
<b>Networking<sup>8</sup></b>				
<b>Ethernet</b>				
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2	Half	32-bit	1..5
08L3341	Netfinity 10/100 Fault Tolerant Adapter	Half	32-bit	1..5
34L0301	Netfinity Gigabit Ethernet SX Adapter	Half	32/64-bit	1..5
<b>Token Ring</b>				
34L0501	Token-Ring 100/16/4 High-Speed PCI Adapter	Half	32-bit	1..5
34L0601	Token-Ring 16/4 PCI Adapter 2	Half	32-bit	1..5
<b>Communications</b>				
33L4618	PCI V90 56 Data/Fax Modem <sup>9</sup>	Half	32-bit	1, 2, 3
37L1414	Serial I/O SST8P DB Adapter <sup>10</sup>	Half	32-bit	1..5 <sup>10</sup>
37L1415	Serial I/O SST16P RJ Adapter <sup>10</sup>	Half	32-bit	1..5 <sup>10</sup>
37L1423	Serial I/O SST16P DB Adapter <sup>10</sup>	Half	32-bit	1..5 <sup>10</sup>
37L1416	Serial I/O SST128P Expandable Adapter <sup>10</sup>	Half	32-bit	1..5 <sup>10</sup>
<b>Systems Management<sup>11</sup></b>				
01K7209	Netfinity Advanced System Management PCI Adapter <sup>12</sup>	Full	32-bit	1..5 <sup>13</sup>
03K9309	Netfinity Advanced System Management Interconnect Cable Kit <sup>14</sup>	-	-	-
36L9654	Netfinity Advanced System Management Token-Ring Connection <sup>15</sup>	-	-	-
<b>Host Attach</b>				
9086001	Netfinity ESCON Adapter <sup>16</sup>	Full	32-bit	1..5 <sup>17</sup>

1. Netfinity 5000 has two integrated Wide Ultra SCSI channels. One is internal and the other is external with a 68-pin High Density connector.

2. All ServeRAID-3x adapters can be upgraded with the same enhanced software utilities and firmware included with ServeRAID-3HB. The download is available for no charge from [www.ibm.com/pc/support](http://www.ibm.com/pc/support). Select "Server" in Brand pulldown, "ServeRAID" in Family pulldown and then "Downloadable files". The upgrade should be considered for installations with firmware less than Version 3.5.

3. Netfinity ServeRAID-3L Ultra2 SCSI Adapter (P/N 01K7364) provides either one internal or one external (08-mm VHDCI) LVDS SCSI channel.

4. Netfinity ServeRAID-3HB Ultra2 SCSI Adapter (P/N 37L6086) provides one internal and 2 external (08-mm VHDCI) LVDS SCSI channels. The internal channel can be configured for external usage (08-mm VHDCI) providing a total of 3 external LVDS SCSI channels. Includes 32MB of mirrored battery-backup cache which helps protect against data loss in write-back cache mode in the event of a power outage or adapter maintenance.

5. See Netfinity Fibre Channel Solutions section for additional configuration information.

6. Requires system BIOS level of 70 or higher which can be found on BIOS Flash Update Diskette version 1.04 or higher. To obtain the latest Flash BIOS, access [www.ibm.com/pc/support](http://www.ibm.com/pc/support) and enter machine "Type-Model" in Quick Path. Select "Downloadable files" then "BIOS".

7. A maximum quantity of four is supported.

8. Netfinity 5000 has an integrated 10/100 PCI Ethernet Controller.

9. Due to homologation variances, modem availability may differ by country.

10. See Appendix E for details on Serial I/O options and configuration limitations. A maximum of four Serial I/O adapters (any combination of P/N 37L1414, 37L1415, 37L1416, 37L1423) may be installed.

11. The Netfinity Advanced Systems Management Processor and Interconnect Bus integrated into Netfinity 5000 works with Netfinity Manager to provide significant system management function. When used with optional Netfinity Advanced System Management PCI Adapter (P/N 01K7209) and Netfinity Advanced System Management Interconnect Cable Kit (P/N 03K9309) additional management and control of up to 12 service processors from a remote console through a single modem or LAN connection is possible.

12. Includes PCI adapter, Netfinity Advanced System Management Interconnect Cable Kit components and 56-watt AC adapter which requires a separate power source. Provides an integrated 10/100 Ethernet port and PCMCIA slot to support optional Netfinity Advanced System Management Token-Ring Connection (P/N 36L9654).

13. A maximum quantity of one is supported.

14. Required for all Netfinity servers containing a standard Advanced System Management Processor that are to be interconnected for system management support through a LAN or modem connection (Netfinity 5500 models 8660- 1..4xU are not supported). Optional Netfinity Advanced System Management PCI Adapter (P/N 01K7209) includes the content of this option. Up to 12 service processors may be interconnected (including standard and optional processors) with an aggregate connection length of no more than 91.4 meters (300 ft.). A customer-supplied Ethernet cable is required for each interconnection.

15. Contains an IBM Turbo 16/4 Token-Ring PCI Card, which installs in the PCMCIA card slot of Netfinity Advanced System Management PCI Adapter (P/N 01K7209), and a PC Card to 9-pin D-Shell cable which is routed to a rear chassis cut-out. The Netfinity Advanced System Management PCI Adapter integrated Ethernet port and Netfinity Advanced System Management Token-Ring Connection cannot be connected or used together.

16. Provides an ESCON MIC and DB9 Serial Port. Cables are not included but are available through S/390 channels. Contact your IBM representative for additional information.

17. A maximum of two 9086001 adapters (installed in non-adjacent slots) are supported in a single Netfinity server.

Slot 5- PCI, 32-bit, Full Length
Slot 4- PCI, 32-bit, Full Length
Slot 3- PCI, 32-bit, Full Length
Slot 2- PCI/ISA, Full Length
Slot 1- PCI/ISA, Full Length



## Netfinity 5000 Power, Monitor & Accessories

Part Number	Description	Part Number	Description
<b>Power<sup>1</sup></b>		<b>Conversion Kits</b>	
10L7007	Netfinity 175 W Redundant Power Supply	10L6972	Netfinity 5000 Rack-to-Tower Conversion Kit
<b>Uninterruptable Power Supply (UPS)<sup>2</sup></b>		10L7006	Netfinity 5000 Tower-to-Rack Conversion Kit
94G3135	APC Smart-UPS 1000 (19 min. runtime at 330 Watts)	<b>Rack and NetBAY<sup>1</sup></b>	
94G3136	APC Smart-UPS 1400 (30 min. runtime at 330 Watts)	930842P	Netfinity Enterprise Rack
94G6674	APC Smart-UPS 1400 RMB (23 min. runtime at 330 Watts) <sup>3</sup>	930842X	Netfinity Enterprise Expansion Cabinet
94G6676	APC Smart-UPS 3000 RMB (62 min. runtime at 330 Watts) <sup>3</sup>	9306900	Netfinity Rack
<b>Monitors</b>		9306200	Netfinity NetBAY22
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black <sup>4</sup>	<b>Keyboard and Mouse<sup>2</sup></b>	
65474AN	G74 Color Monitor 17" (15.9" Viewable Image Size), stealth black <sup>4</sup>	28L3644	Space Saver II Keyboard <sup>3, 5</sup>
65494AN	G96 Color Monitor 19" (17.9" Viewable Image Size), stealth black <sup>5</sup>	01K1260	TrackPoint IV 104-Key Black Keyboard <sup>4, 5</sup>
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black <sup>6</sup>	28L3621	Preferred Keyboard (stealth black) <sup>4</sup>
		28L3673	Sleek 2-Button Stealth Black Mouse

1. Netfinity 5000 includes redundant 175W power supplies within a single 350W unit. This 350W unit is sufficient to operate fully configured systems, however optional Netfinity 175W Redundant Power Supply (P/N 10L7007) is required to preserve N+1 redundancy if any of the following are exceeded:

- 512 MB of memory
- Three hard disk drives and/or tape drives
- Two PCI or ISA adapters

Netfinity 175W Redundant Power Supply (P/N 10L7007) includes a power cord which requires an additional power source. An independent power source such as a 2nd UPS or 2nd circuit is not required.

2. Stated runtimes and power are for typical configurations (approximately 70% of maximum capacity). For additional information, see Appendix C: UPS Runtime Estimate.

3. Height is 3U. See "Rack and NetBAY" for supported IBM racks.

4. Installation within a rack requires optional Monitor Compartment (P/N 94G7444).

5. Not supported for installation in a 19" rack.

6. Installation within a rack requires optional Netfinity Flat Panel Monitor Rack Mount Kit (P/N 37L6857) and Netfinity Rack Keyboard Tray (P/N 28L4707). A space saver keyboard may coexist within the same 28L4707 keyboard tray.

1. Netfinity 5000 rack models are housed in a 19" rack mountable drawer and require one of the racks listed here. See IBM Netfinity Rack Cabinet and Options section for IBM rack supported devices.

2. Tower models include both a mouse and keyboard. Rack models include neither.

3. Installation within a rack requires optional keyboard tray P/N 28L4707 (stows in "ready-to-use" position).

4. Installation within a rack requires optional keyboard tray P/N 28L4707. This keyboard cannot share a keyboard tray with a flat panel display.

5. Advanced TrackPoint IV features are not available on IBM Netfinity systems.

### Netfinity 5000 Tape Options

Part Number	Description	Bays Supported	SCSI Interface (bit)	Form Factor	Termination Included	68/50-pin Converter Incl.	Ext. Tape Enclosures <sup>1</sup>
01K1282	12/24 GB DDS/3 4-mm Internal Tape Drive	A	8	3.5" HH or 5.25" HH	Y <sup>2</sup>	Y	3510020
01K1319	10/20 GB NS Internal SCSI Tape Drive	A	8	3.5" SL or 5.25" HH	Y <sup>2</sup>	Y	3510020, 3551001
00N7991	20/40 GB DDS/4 4-mm Internal Tape Drive	A	16 Ultra2 LVD	3.5" HH or 5.25" HH	Y <sup>2</sup>	N	3510020, 3551001
01K1325	20/40 GB 8-mm Internal SCSI Tape Drive	A	16	5.25" HH	N <sup>3</sup>	N	3510020 <sup>4</sup> , 3551001
01K1320	20/40 GB DLT Internal SCSI Tape Drive	N/A <sup>10</sup>	8	5.25" FH	Y <sup>2</sup>	Y	3503B0X, 3551001
04K0149	35/70 GB DLT Internal SCSI Tape Drive	N/A <sup>10</sup>	16	5.25" FH	N	N	3503B0X <sup>4</sup> , 3551001
00N7990	40/80 GB DLT Internal SCSI Tape Drive	N/A <sup>10</sup>	16 LVD	5.25" FH	N	N	3503B0X <sup>4</sup> , 3551001
<b>Associated Options</b>							
32G3918	SCSI-2 16-bit Active Terminator	-	16	External	Y	N	3503B0X, 3510020
36L9636	Netfinity Two-Drop Internal SCSI Cable <sup>5</sup>	-	16	Internal	Y	N	-
<b>External Tape Enclosures</b>							
3510020	External Half High SCSI Storage Enclosure <sup>6</sup>	-	8/16	Desktop	N	N	-
3551001	NetMEDIA Storage Expansion Unit EL <sup>7</sup>	-	16	Rack	Y	N	-
10L7113	NetMEDIA Systems Management Adapter <sup>9</sup>	-	16	-	N	N	3551001
3503B0X	DLT External SCSI Enclosure <sup>11</sup>	-	16	Desktop	N	N	-
<b>External Tape Libraries<sup>8</sup></b>							
3502108	DLT Tape Autoloader	-	16	Desktop	Y	-	-
3503108	DLT8000 Tape Autoloader	-	16 LVD	Desktop	Y	-	-
3503x14	DLT8000 Tape Library	-	16 LVD	Desktop or Rack	Y	-	-
3570xxx	Magstar MP 3570 Tape Subsystem (models B2x and C2x)	-	Diff.	Rack	Y	-	-

1. To determine cable requirements, note the tape drive's SCSI interface, the appropriate SCSI controller from the system configurator section, and the desired enclosure, then refer to Appendix D: Cables-Storage Units-Controllers.

2. Tape drive is capable of self termination.

3. Termination is provided by the system unit's standard SCSI cabling.

4. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).

5. Netfinity Two-Drop Internal SCSI Cable (P/N 36L9636) is a wide two-drop terminated cable and is required for attachment of internal tape drives to the onboard SCSI controller of a Netfinity 5000 when the hot-swap backplane is attached to a RAID controller.

6. Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either tape drive self termination or SCSI-2 16-bit Active Terminator (P/N 32G3918).

7. Provides a black 3U, 19" rack or NetBAY3 mountable tape enclosure. Provides two full high (FH) or four half high (HH) extended length 5.25" bays. External connector is 0.8-mm VHDCI. Includes two power supplies and two power cords.

8. Tape library attributes and prerequisites are located in Appendix B: Tape Library Attributes.

9. Installs in 3551001. Provides repeater function and LVDS interface allowing longer cable lengths and auto-termination when the 3551001 is powered off.

10. Supported in an external tape enclosure only.

11. Provides a black desktop DLT tape enclosure with a 68-pin high density external connector. Requires termination by the tape drive or by installation of a SCSI-2 16-bit Active Terminator (P/N 32G3918).

NOTE: SCSI support for tape drives is provided by system unit onboard (standard) controller (no-RAID function) or PCI Fast Wide Ultra SCSI Adapter P/N 02K3454. When standard cabling is connected to a RAID controller, tape drives must utilize terminated Netfinity Two-Drop Internal SCSI Cable (P/N 36L9636), and attach to the onboard or other supported controller. Additional tape attributes can be found in Appendix A: Tape Drive Attributes.

For a complete list of all IBM and non-IBM option compatibility with Network Operating Systems and IBM Netfinity Servers, access the ServerProven™ compatibility pages on the Web at URL [www.ibm.com/pc/us/compat](http://www.ibm.com/pc/us/compat).



## Sample Configurations

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

### Internet Server

Part Number	Description	Quantity
8659-51Y	Netfinity 5000 (Pentium III 550/128 MB/Open Bay)	1
01K7241	Netfinity 64 MB SDRAM ECC RDIMM <sup>1</sup>	1
01K7364	Netfinity ServeRAID-3L Ultra2 SCSI Adapter	1
01K8053	Netfinity 91 GB Wide Ultra SCSI SCA-2 SL HDD <sup>2</sup>	4
01K1325	20/40 GB 8-mm Internal SCSI Tape Drive	1
36L9636	Netfinity Two-Drop Internal SCSI Cable	1
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1
94G3135	APC Smart-UPS 1000	1
10L7007	Netfinity 175 W Redundant Power Supply	1

1. For a total of 192 MB of system memory.

2. For a total of 36.4 GB of RAID protected Hot-Swap, Hot-Spare internal storage.

An Internet server is a server that handles all requests from the Internet (intranet or extranet). Usually, this type of server has the same characteristics as a file server. The main difference is that an internet server talks a different language (TCP/IP vs. NETBEUI or IPX/SPX) and often needs to do an extra security check (Firewall). In the case of an Internet server, the server itself talks mostly to just one client, the Internet Service Provider (ISP), instead of many clients like a file server does.

With this in mind the IBM Netfinity 5000 was selected to provide an affordable price point for the growing internet server market with two way Pentium II processing, 192 MB of system memory (expandable to 2 GB), and availability features such as RAID protected internal hot-swap storage and power protection with an APC Smart-UPS.

The network configuration depends on the method that will be used to connect the server to the Internet. Usually fast Ethernet routers are used, but if other methods are used, you can add the appropriate adapter. The configuration includes a tape backup unit for secure backup of critical data in the event of a system or storage failure.

### File and Print Server

Part Number	Description	Quantity
8659-41Y	Netfinity 5000 (Pentium III 500/128 MB/Open Bay)	1
01K7241	Netfinity 64 MB SDRAM ECC RDIMM <sup>1</sup>	1
01K7364	Netfinity ServeRAID-3L Ultra2 SCSI Adapter	1
01K8053	Netfinity 91 GB Wide Ultra SCSI SCA-2 SL HDD <sup>2</sup>	5
01K1325	20/40 GB 8-mm Internal SCSI Tape Drive	1
36L9636	Netfinity Two-Drop Internal SCSI Cable	1
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1
94G3135	APC Smart-UPS 1000	1

1. For a total of 192 MB of system memory.

2. For a total of 45.5 GB of RAID protected Hot-Swap, Hot-Spare internal storage.

A small business or departmental server is usually required to perform all typical server functions while servicing up to 100 users in a normal workgroup computing environment, but doesn't require the high-end performance and fault tolerance properties of larger servers.

The sample configuration above consists of an IBM Netfinity 5000 with 192 MB of memory and 45.5 GB of hard disk space. It has enough processor power and memory to run most current network operating systems comfortably and enough hard disk drive space to store a significant amount of data with additional external storage expansion still available. Demanding network traffic is effectively handled by the standard 100 Mbps Ethernet connection. This configuration also includes a tape backup unit, monitor, and a UPS to keep the system protected during power surges and outages.



### Rack Mounted Application Server

Part Number	Description	Quantity
8659-6RY	Netfinity 5000 (Pentium III 600/128 MB/Open Bay/Rack)	1
33L5106	Netfinity 600 MHz/512 KB Upgrade with Pentium III Processor	1
01K8043	Netfinity 256 MB SDRAM ECC RDIMM <sup>1</sup>	1
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter	1
36L9806	Netfinity 9.1 GB 10K-3 Wide Ultra SCSI Hot-Swap SL HDD <sup>2</sup>	5
01K1325	20/40 GB 8-mm Internal SCSI Tape Drive	1
36L9636	Netfinity Two-Drop Internal SCSI Cable	1
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1
94G6674	APC Smart-UPS 1400RMB	1
10L7007	Netfinity 175 W Redundant Power Supply	1
<b>Industry Standard 19" Rack, EIA-310D, Min. depth of 28" (711 mm)</b>		
9306200	Netfinity NetBAY22	1
28L3644	Space Saver II Keyboard	1
94G6670	Blank Filler Kit	2

1. For a total of 384 MB of system memory.

2. For a total of 36.4 GB usable RAID 5 storage (45.5GB total disk).

An application server differs from a file and print server in that it has a higher workload, in providing application serving requirements for users. With this in mind the IBM Netfinity 5000 was selected to provide an affordable price point for an application server, with two-way Pentium III processing, 384 MB of system memory (expandable to 2 GB), and availability features such as battery-backed cache RAID protected internal Hot-Swap storage and power protection with an APC Smart-UPS.



# IBM Netfinity 5500 Configurator

Part Number	Processor Speed (MHz)	Number of Processors (Std/Max)	L2 ECC Cache (KB)	Memory (Std./Max.) (R=RDIMM) <sup>2</sup>	Form Factor	Power Supply Quantity (Std/Max)	Hot-Swap (Power, Slots, HDD, Fans)	Redundancy (Optional, Standard)	Adv. System Management Processor	Onboard Ethernet (Mbps)	SCSI Controller (Dual, Ultra, RAID, LVD)	Removable Media Bays (Total/Avail.)	Internal Hard Disk Drives (Std/Max)	CD-ROM (IDE)	Bays: (Total/Avail.)	Slots: (Total/Avail.)
8660-61U	500 <sup>7</sup>	1/2	512	128 MB (R) /1GB	Tower <sup>4</sup>	1/2	P, S, H, F	S-Fans, O-Power	Y	10/100	D,R	4/2	0/109 GB <sup>5</sup>	(32X-14X) <sup>6</sup>	10/8	7/7
8660-6RU <sup>1</sup>	500 <sup>7</sup>	1/2	512	128 MB (R) /1GB	Rack (8U)	1/2	P, S, H, F	S-Fans, O-Power	Y	10/100	D,R	4/2	0/109 GB	(32X-14X) <sup>6</sup>	10/8	7/7
8660-62U <sup>8</sup>	500 <sup>7</sup>	1/2	512	256 MB (R) /1GB	Tower <sup>4</sup>	1/2	P, S, H, F	S-Fans, O-Power	Y	10/100	D,R	4/2	0/109 GB <sup>5</sup>	(32X-14X) <sup>6</sup>	10/8	7/7
8660-6SU <sup>1,8</sup>	500 <sup>7</sup>	1/2	512	256 MB (R) /1GB	Rack (8U)	1/2	P, S, H, F	S-Fans, O-Power	Y	10/100	D,R	4/2	0/109 GB	(32X-14X) <sup>6</sup>	10/8	7/7
8660-72U	550 <sup>7</sup>	1/2	512	256 MB (R) /1GB	Tower <sup>4</sup>	1/2	P, S, H, F	S-Fans, O-Power	Y	10/100	D,R	4/2	0/109 GB <sup>5</sup>	(32X-14X) <sup>6</sup>	10/8	7/7
8660-7SU <sup>1</sup>	550 <sup>7</sup>	1/2	512	256 MB (R) /1GB	Rack (8U)	1/2	P, S, H, F	S-Fans, O-Power	Y	10/100	D,R	4/2	0/109 GB	(32X-14X) <sup>6</sup>	10/8	7/7

1. Housed in a 19" Rack mountable drawer and ships standard without a keyboard or mouse. See "Rack and NetBay" under "Netfinity 5500 Power, Monitor & Accessories" for supported IBM racks.
2. Netfinity 5500 models which have Netfinity Upgrade for Pentium II Xeon Processors (P/N 01K8049) installed have a maximum memory capacity of 2 GB. With Netfinity Four-Way Processor Upgrade Kit (P/N 28L1014) the maximum memory is 4 GB.
3. The memory DIMM shipped with this model is NOT compatible with Registered DIMMs (RDIMMs), Netfinity Upgrade for Pentium II Xeon Processors (P/N 01K8049) or Netfinity Four-Way Processor Upgrade Kit (P/N 28L1014) and must be replaced if either upgrade or a RDIMM is installed.
4. Tower models come equipped with a single NetBay3, 3U stackable enclosure. Up to a maximum of three are supported.
5. With a single Netfinity EXP15 installed in the standard NetBay3, the maximum internal storage increase by 364 GB.
6. Variable read rate. Actual playback speed will vary and is often less than the maximum possible.
7. Intel Pentium III Processor.
8. Not available in the USA.

## Netfinity 5500 Processor Upgrades

Part Number	Processor Upgrades with 512 KB Cache	SMP Support <sup>1</sup>	Processor Speed/Cache Upgrade <sup>2</sup>
10L5883	Netfinity 350 MHz, Upgrade with Pentium II Processor	All 1xU	-
10L5884	Netfinity 400/100 MHz, 512 KB Processor Upgrade	All 4xU	All 1xU
10L5900	Netfinity 450/100 MHz, 512 KB Processor Upgrade with Pentium II Processor	All 5xU	All 1...4xU
36L9673	Netfinity 500 MHz/512 KB Upgrade with Pentium III Processor	All 6xU	All 1...5xU
33L5112	Netfinity 550 MHz/512 KB Upgrade with Pentium III Processor	All 7xU	All 1...6xU
01K8049	Netfinity Upgrade for Pentium II Xeon Processors <sup>3</sup>	-	All <sup>3</sup>
28L1014	Netfinity Four-Way Processor Upgrade Kit <sup>4</sup>	-	All <sup>4</sup>

1. One additional processor may be installed, providing a maximum of two. All processors must be identical in type, speed, and cache size.
2. Requires removal of the standard processor. A maximum of two processors may be installed. All processors must be identical in type, speed and cache size. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access [www.ibm.com/pc/support](http://www.ibm.com/pc/support) and enter machine "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".
3. Provides required components for upgrading an IBM Netfinity 5500 to a 2-way SMP Pentium II Xeon processor capable system. Key components include: two slot 2 processor sockets, 440Gx Host Bridge Controller, four RDIMM memory sockets, four VRM sockets, and a terminator card. Components that are NOT included and must be ordered separately: processors and memory. All Netfinity 5500 models require processor replacement. Standard memory DIMMs on models 8660-11U, 1RU, 41U, 4RU, 51U, and 5RU are not compatible and must be replaced. Refer to Netfinity 5500 M10 configurator for option compatibility with any 5500 containing upgrade P/N 01K8049. A maximum of two processors may be installed. All processors must be identical in type, speed and cache size. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access [www.ibm.com/pc/support](http://www.ibm.com/pc/support) and enter machine "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".
4. Provides required components for upgrading an IBM Netfinity 5500 to a 4-way Pentium II Xeon or Pentium III Xeon SMP capable system. Installation of P/N 28L1014 prevents the use of PCI slot 6 and shortens slot 5 to Half Length. Installation must be performed by an IBM trained service or IBM Customer Engineer. Installation is included in the purchase price. Key components include: memory card ( 4 GB capacity), processor card assembly, power backplane, 500W power supply, assorted cables, LED card, and chassis hardware. Components that are NOT included and must be ordered separately: processors, memory and 500W redundant power supply. All Netfinity 5500 models require processor replacement. Standard memory DIMMs on models 8660-11U, 1RU, 41U, 4RU, 51U, and 5RU are not compatible and must be replaced. Refer to Netfinity 5500 M20 configurator for option compatibility with any 5500 containing upgrade P/N 28L1014. A maximum of four processors may be installed. All processors must be identical in type, speed and cache size. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access [www.ibm.com/pc/support](http://www.ibm.com/pc/support) and enter machine "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".



### Netfinity 5500 Memory

Total Memory	DIMM Models 8660-11U, 1RU, 41U, 4RU, 51U, 5RU	RDIMM Models 8660-61U, 6RU	RDIMM Models 8660-42U, 4SU, 52U, 5SU, 62U, 6SU, 7xU
128 MB	128 MB DIMM Standard	128 MB RDIMM Standard	-
192 MB	1 x 01K8022	-	-
256 MB	1 x 01K8023	1 x 01K7262	256 MB RDIMM Standard
384 MB	2 x 01K8023	1 x 01K8043	1 x 01K7262
512 MB	3 x 01K8023	1 x 01K7262, 1 x 01K8043	1 x 01K8043
640 MB	2 x 01K8043, 1 x 01K7262 <sup>1</sup>	2 x 01K8043	1 x 01K8043, 1 x 01K7262
768 MB	3 x 01K8043 <sup>1</sup>	1 x 01K7262, 2 x 01K8043	2 x 01K8043
896 MB	3 x 01K8043, 1 x 01K7262 <sup>1</sup>	3 x 01K8043	2 x 01K8043, 1 x 01K7262
1024 MB (max)	4 x 01K8043 <sup>1</sup>	4 x 01K8043 <sup>1</sup>	3 x 01K8043

This table does not represent all possible memory configurations.  
1. Replace standard (R)DIMMs.

RDIMM Slot 1 - J4
RDIMM Slot 2 - J3
RDIMM Slot 3 - J2
RDIMM Slot 4 - J1
Standard (R)DIMM

IBM NETFINITY 5500

Part Number	Memory Description	Models 8660-11U, 1RU, 41U, 4RU, 51U, 5RU	All Other Models	Upgrade 01K8049 or 28L1014
01K8022	Netfinity 64 MB SDRAM ECC DIMM <sup>1</sup>	X	X <sup>3</sup>	-
01K8023	128 MB SDRAM ECC DIMM <sup>1</sup>	X	X <sup>3</sup>	-
01K7262	Netfinity 128 MB SDRAM ECC RDIMM <sup>1</sup>	X <sup>2</sup>	X	X <sup>4</sup>
01K8043	Netfinity 256 MB SDRAM ECC RDIMM <sup>1</sup>	X <sup>2</sup>	X	X <sup>4</sup>

- DIMMs or RDIMMs must be installed in sequence beginning with slot 4 (J1) and ordered from largest to smallest.
- Requires removal of standard DIMM. Cannot co-exist with 64 MB (P/N 01K8022) or 128 MB (P/N 01K8023) DIMMs.
- Requires removal of standard RDIMM. Cannot co-exist with 128 MB (P/N 01K7262) or 256 MB (P/N 01K8043) RDIMMs.
- Models with Netfinity Upgrade for Pentium II Xeon Processors (01K8049) installed should reference Netfinity 5500 M10 for compatibility and sample configurations. Models with Netfinity Four-Way Processor Upgrade Kit (28L1014) installed should reference Netfinity 5500 M20 for compatibility and sample configurations.



## Netfinity 5500 Hard Disk Drive (HDD) Storage

Total Int. Storage <sup>1</sup>	7200 RPM Hard Disk Drives (HDDs)			10,000 RPM Hard Disk Drives (HDDs)		
	9.1 GB	18.2 GB	36.4 GB	9.1 GB	18.2 GB	36.4 GB
0 GB	Standard on Base Models			Standard on Base Models		
91 GB	1 x 01K8053	-	-	1 x 36L9806	-	-
18.2 GB	2 x 01K8053 or	1 x 02K0440		2 x 36L9806 or	1 x 36L9807	-
272 GB	3 x 01K8053	-	-	3 x 36L9806	-	-
36.4 GB	4 x 01K8053 or	2 x 02K0440 or	1 x 02K0441	4 x 36L9806 or	2 x 36L9807 or	1 x 36L9808
45.5 GB	5 x 01K8053	-	-	5 x 36L9806	-	-
54.6 GB	6 x 01K8053 or	3 x 02K0440	-	6 x 36L9806 or	3 x 36L9807	-
72.8 GB	-	4 x 02K0440 or	2 x 02K0441	-	4 x 36L9807 or	2 x 36L9808
91 GB	-	5 x 02K0440	-	-	5 x 36L9807	-
109 GB(max)	-	6 x 02K0440 or	3 x 02K0441	-	6 x 36L9807 or	3 x 36L9808

This table does not represent all possible hard drive configurations.

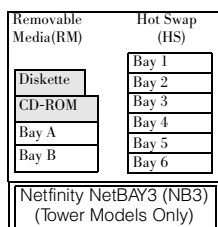
1. Total Internal Storage listed is within  $\pm 0.2$  GB unless otherwise noted.

Bay	Form Factor	Height	Front Access	Usage	Part Number	Description	RPM	Height	Bays Supported	Max. Qty.
<b>Internal Hard Disk Drives</b>										
-	3.5"	SL	Yes	Diskette	01K8053	Netfinity 91 GB Wide Ultra SCSI SCA-2 SL HDD	7200	SL	1..6	6
-	5.25"	HH	Yes	IDE CD-ROM	02K0440	Netfinity 18.2 GB Wide Ultra SCSI Hot-Swap SL HDD	7200	SL	1..6	6
A	5.25"	HH <sup>1</sup>	Yes	Open	02K0441	Netfinity 36.4 GB Wide Ultra SCSI Hot-Swap HDD	7200	HH <sup>1</sup>	1/2, 3/4, 5/6	3
B	5.25"	HH <sup>1</sup>	Yes	Open	36L9806	Netfinity 91 GB 10K-3 Wide Ultra SCSI Hot-Swap SL HDD	10,000	SL	1..6	6
1..6	HS	SL <sup>2</sup>	Yes	Open	36L9807	Netfinity 18.2 GB 10K-3 Wide Ultra SCSI Hot-Swap SL HDD	10,000	SL	1..6	6
NB3 <sup>3</sup>	19" Rack	3U	Yes	Open	36L9808	Netfinity 36.4 GB 10K-3 Wide Ultra SCSI Hot-Swap HDD	10,000	HH <sup>1</sup>	1/2, 3/4, 5/6	3

1. Two half-high (HH) bays can be combined to support a single full-high device.

2. Two slim-line (SL) bays can be combined to support a single half-high device.

3. One NetBAY3 is included with tower models and a total of three are supported. See IBM Netfinity NetBAY3 Stackable Enclosure section for supported devices.



<b>External Storage Expansion Units<sup>2</sup></b>		<b>Form Factor</b>
35202RU	Netfinity EXP15 Storage Expansion Unit	Rack (3U)
35301RU	Netfinity EXP200 Storage Expansion Unit	Rack (3U)
37L5857	Netfinity EXP200 Rack-to-Tower Conversion Kit	Tower

1. Two slim-line (SL) bays can be combined to support a single half-high (HH) device.

2. Supported by the onboard external SCSI port (requires Netfinity SCSI Controller Cable P/N 03K9313). Select the onboard or optional SCSI controller then refer to Appendix D: Cables-Storage Units-Controllers to confirm the controller supports the desired External Storage Expansion Unit and to select a supported cable. For HDD or other expansion unit options, see the specific expansion unit section.

## Internal SCSI Cabling

Netfinity 5500 and 5500 M10 systems contain a backplane supporting six hot-swap drive bays. The backplane is connected to one of the two connectors of the integrated dual-channel ServeRAID controller through a 16-bit SCSI cable. A two-drop 16-bit SCSI cable, with an integrated terminator, is included with the server to support up to two internal removable media devices connected to the second RAID connector or a supported SCSI adapter. Optional Netfinity SCSI Controller Cable (P/N 03K9313) is a 16-bit cable that can be attached to the second RAID connector and routed to the rear panel cutout providing an external 16-bit VHDCI 0.8-mm connector. If internal removable media devices are required in addition to external RAID device attachment, a supported SCSI adapter must be installed using the standard two-drop SCSI cable for device/adaptor connection. If connecting narrow devices to this cable, additional 68-pin to 50-pin converters (P/N 32G3925) must be ordered. Some narrow devices include a converter in their ship group.





## Netfinity 5500 I/O Options

Part Number	Description	Adapter Length	PCI Support	Slots Supported <sup>1</sup>	Hot-Plug <sup>2</sup>
<b>Storage Controllers<sup>3</sup></b>					
01K7364	Netfinity ServeRAID-3L Ultra2 SCSI Adapter <sup>4, 5</sup>	Full	32-bit	1..6	X
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter <sup>6</sup>	Full	32/64-bit	1..6	X
02K3454	PCI Fast/Wide Ultra SCSI Adapter	Half	32-bit	1..6	-
01K7297	Netfinity Fibre Channel PCI Adapter <sup>7</sup>	Half	32/64-bit	1..6	-
09L2123	Advanced SerialRAID/X Adapter	Full	32-bit	1..6 <sup>8</sup>	-
<b>Networking<sup>9</sup></b>					
<b>Ethernet</b>					
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2	Half	32-bit	1..6	X
08L3341	Netfinity 10/100 Fault Tolerant Adapter	Half	32-bit	1..6	X
34L0301	Netfinity Gigabit Ethernet SX Adapter	Half	32/64-bit	1..6	X
<b>Token Ring</b>					
34L0501	Token-Ring 100/16/4 High-Speed PCI Adapter	Half	32-bit	1..6	-
34L0601	Token-Ring 16/4 PCI Adapter 2	Half	32-bit	1..6	X
<b>Communications</b>					
33L4618	PCI V90 56 Data/Fax Modem <sup>10</sup>	Half	32-bit	1..6	-
37L1414	Serial I/O SST8P DB Adapter <sup>11</sup>	Half	32-bit	1..6 <sup>11</sup>	-
37L1415	Serial I/O SST16P RJ Adapter <sup>11</sup>	Half	32-bit	1..6 <sup>11</sup>	-
37L1423	Serial I/O SST16P DB Adapter <sup>11</sup>	Half	32-bit	1..6 <sup>11</sup>	-
37L1416	Serial I/O SST128P Expandable Adapter <sup>11</sup>	Half	32-bit	1..6 <sup>11</sup>	-
<b>Systems Management<sup>12</sup></b>					
01K7209	Netfinity Advanced System Management PCI Adapter <sup>13</sup>	Full	32-bit	1..6 <sup>14</sup>	-
03K9309	Netfinity Advanced System Management Interconnect Cable Kit <sup>15</sup>	-	-	-	-
36L9654	Netfinity Advanced System Management Token-Ring Connection <sup>16</sup>	-	-	-	-
<b>Host Attach</b>					
9086001	Netfinity ESCON Adapter <sup>17</sup>	Full	32-bit	1..6 <sup>18</sup>	-

1. PCI Slots 1, 2, 3 and 4 support Hot Plug devices.

2. Hot Plug capable using IBM's Active PCI Technology. For Network Operating System support access URL [www.ibm.com/pc/us/compat](http://www.ibm.com/pc/us/compat).

3. Netfinity 5500 and 5500 Mxx have a dual channel ServeRAID II Wide Ultra SCSI controller.

4. All ServeRAID-3x adapters can be upgraded with the same enhanced software utilities and firmware included with ServeRAID-3HB. The download is available for no charge from [www.ibm.com/pc/support](http://www.ibm.com/pc/support). Select "Server" in Brand pulldown, "ServeRAID" in Family pulldown and then "Downloadable files". The upgrade should be considered for installations with firmware less than Version 3.5.

5. Netfinity ServeRAID-3L Ultra2 SCSI Adapter (P/N 01K7364) provides either one internal or one external (0.8 mm VHDCI) LVDS SCSI channel.

6. Netfinity ServeRAID-3HB Ultra2 SCSI Adapter (P/N 37L6086) provides one internal and 2 external (0.8mm VHDCI) LVDS SCSI channels. The internal channel can be configured for external usage (0.8 mm VHDCI) providing a total of 3 external LVDS SCSI channels. Includes 32 MB of mirrored battery-backup cache which helps protect against data loss in write-back cache mode in the event of a power outage or adapter maintenance.

7. See Netfinity Fibre Channel Solutions section for additional configuration information.

8. A maximum quantity of four is supported.

9. Netfinity 5500 and 5500 Mxx have an integrated 10/100 PCI Ethernet Controller.

10. Due to homologation variances, modem availability may differ by country.

11. See Appendix E for details on Serial I/O options and configuration limitations. A maximum of four Serial I/O adapters (any combination of P/N 37L1414, 37L1415, 37L1416, 37L1423) may be installed.

12. The Netfinity Advanced System Management Processor and Interconnect Bus integrated into Netfinity 5500 (8660-5..6xU) and 5500 Mxx works with Netfinity Manager to provide significant system management function. When used with optional Netfinity Advanced System Management PCI Adapter (P/N 01K7209) and Netfinity Advanced System Management Interconnect Cable Kit (P/N 03K9309) additional management and control of up to 12 service processors from a remote console through a single modem or LAN connection is possible. Systems management options P/N 01K7209, 03K9309 and 36L9654 are NOT supported by Netfinity 5500 models 8660-1..4xU.

13. Includes PCI adapter, Netfinity Advanced Systems Management Interconnect Cable Kit components and 56-watt AC adapter, which requires a separate power source. Provides an integrated 10/100 Ethernet port and a PCMCIA slot to support optional Netfinity Advanced System Management Token-Ring Connection (P/N 36L9654). NOT supported by Netfinity 5500 models 8660-1..4xU.

14. A maximum quantity of one is supported.

15. Required for all Netfinity Servers containing a standard Advanced System Management Processor that are to be interconnected for system management support through a LAN or modem connection (Netfinity 5500 models 8660 1..4xU are not supported). Optional Netfinity Advanced System Management PCI Adapter (P/N 01K7209) includes the contents of this option. Up to 12 service processors may be interconnected (including standard and optional processors) with an aggregate connection length of no more than 91.4 meters (300 ft.). A customer-supplied Ethernet cable is required for each interconnection.

16. Contains an IBM Turbo 16/4 Token-Ring PCI Card, which installs in the PCMCIA card slot of Netfinity Advanced System Management PCI Adapter (P/N 01K7209), and a PC Card to 9-pin D-Shell cable which is routed to a rear chassis cut-out. The Netfinity Advanced System Management PCI Adapter's integrated Ethernet port and Netfinity Advanced System Management Token-Ring Connection cannot be connected or used together.

17. Provides an ESCON MIC and DB9 Serial Port. Cables are not included but are available through S/390 channels. Contact your IBM representative for additional information.

18. A maximum of two 9086001 adapters (installed in non-adjacent slots) are supported in a single Netfinity server.

ISA, Full Length
Slot 1- PCI, Hot-Plug, 32-bit, Full Length
Slot 2- PCI, Hot-Plug, 32-bit, Full Length
Slot 3- PCI, Hot-Plug, 32-bit, Full Length
Slot 4- PCI, Hot-Plug, 32-bit, Full Length
Slot 5- PCI, 32-bit, Primary Bus, Full Length
Slot 6- PCI, 32-bit, Primary Bus, Full Length

IBM NETFINITY 5500



## Netfinity 5500 Power, Monitor & Accessories

Part Number	Description
<b>Power<sup>1</sup></b>	
01K7951	Netfinity 400 W Hot-Swap Redundant Power Supply II <sup>2</sup>
<b>Uninterruptible Power Supply (UPS)<sup>3</sup></b>	
94G3136	APC Smart-UPS 1400 (26 min. runtime at 375 Watts)
94G6674	APC Smart-UPS 1400RMB (21min. runtime at 375 Watts) <sup>4</sup>
94G6676	APC Smart-UPS 3000RMB (55 min. runtime at 375 Watts) <sup>4</sup>
<b>Monitors</b>	
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black <sup>5</sup>
65474AN	G74 Color Monitor 17" (15.9" Viewable Image Size), stealth black <sup>5</sup>
65494AN	G96 Color Monitor 19" (17.9" Viewable Image Size), stealth black <sup>6</sup>
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black <sup>7</sup>
<b>Cables</b>	
03K9313	Netfinity SCSI Controller Cable (0.8 mm) <sup>8</sup>
32G3925	SCSI 68-pin to 50-pin Converter

1. Netfinity 5500 and 5500 M10 include a single 400 W power supply which is sufficient to operate fully configured systems. If power supply redundancy is desired, optional power supply P/N 01K7951 is required.
2. Includes a power cord which requires an additional power source. Even though a second UPS provides a redundant power source, systems management software does not currently take advantage of its power outage alerts.
3. Stated runtimes and power are for typical configurations (approximately 70% of maximum capacity). For additional information see Appendix C: UPS Runtime Estimate.
4. Height is 3U. See "Rack and NetBAY" for supported IBM racks.
5. Installation within a rack requires optional Monitor Compartment (P/N 94G7444).
6. Not supported for installation in a 19" rack.
7. Installation within a rack requires optional Netfinity Flat Panel Rack Mount Kit (P/N 37L6857) and Netfinity Rack Keyboard Tray (P/N 28L4707). A space saver keyboard may coexist within the same 28L4707 keyboard tray.
8. Used for routing the second internal SCSI RAID channel to an external 0.8 mm VHDCI connector. Can be used with IBM 8 mm to 68-pin SCSI Adapter (P/N 01K8017) to provide an external 68-pin high density connector.

Part Number	Description
<b>Conversion Kits</b>	
01K8021	Netfinity 5500 Rack-to-Tower Kit <sup>1</sup>
01K8020	Netfinity 5500 Tower-to-Rack Kit
<b>Rack and NetBAY<sup>2</sup></b>	
930842P	Netfinity Enterprise Rack
930842X	Netfinity Enterprise Expansion Cabinet
9306900	Netfinity Rack
9306200	Netfinity NetBAY22
10L6912	Netfinity NetBAY3 <sup>3</sup>
10L6913	Netfinity Caster Set
<b>Keyboard and Mouse<sup>4</sup></b>	
28L3644	Space Saver II Keyboard <sup>5,7</sup>
01K1260	TrackPoint IV 104-Key Black Keyboard <sup>6,7</sup>
28L3621	Preferred Keyboard (stealth black) <sup>6</sup>
28L3673	Sleek 2-Button Stealth Black Mouse

1. Includes one Netfinity NetBAY3 with skid pads. Optional casters (P/N 10L6913) are available.
2. Netfinity 5500 and 5500 Mxx rack models are housed in a 19" rack mountable drawer and require one of the racks listed here. Tower models include a single NetBAY3 with skid pads. Optional casters (P/N 10L6913) are available. See IBM Netfinity Rack Cabinet and Options section for IBM rack NetBAY3 with skid pads. Optional casters (P/N 10L6913) are available. See IBM Netfinity Rack supported devices.
3. A maximum of three NetBAY3 enclosures (including the standard one) may be stacked beneath a supported Netfinity tower server. Casters are not included. See IBM Netfinity NetBAY3 Stackable Enclosure section for supported devices.
4. Tower models include both a mouse and keyboard. Rack models include neither.
5. Installation within a rack requires optional keyboard tray P/N 28L4707 (stows in "ready-to-use" position).
6. Installation within a rack requires optional keyboard tray P/N 28L4707. This keyboard cannot share a keyboard tray with a flat panel display.
7. Advanced TrackPoint IV features are not available on IBM Netfinity systems.



## Netfinity 5500 Tape Options

Part Number	Description	Bays Supported	SCSI Interface (bit)	Form Factor	Termination Included	68/50-pin Converter Incl.	Ext. Tape Encl. <sup>1</sup>
01K1282	12/24 GB DDS/3 4-mm Internal Tape Drive	A, B	8	3.5" HH or 5.25" HH	Y <sup>2</sup>	Y	3510020
00N7991	20/40 GB DDS/4 4-mm Internal Tape Drive	A,B	16 Ultra2 LVD	3.5" HH or 5.25" HH	Y <sup>2</sup>	N	3510020, 3551001
01K1325	20/40 GB 8-mm Internal SCSI Tape Drive	A, B	16	5.25" HH	N <sup>3</sup>	N	3551001, 3510020 <sup>4</sup>
01K1320	20/40 GB DLT Internal SCSI Tape Drive	A/B <sup>5</sup>	8	5.25" FH	Y <sup>2</sup>	Y	3503BOX, 3551001
04K0149	35/70 GB DLT Internal SCSI Tape Drive	A/B <sup>5</sup>	16	5.25" FH	N <sup>3</sup>	N	3503BOX <sup>4</sup> , 3551001
00N7990	40/80 GB DLT Internal SCSI Tape Drive	A/B <sup>5</sup>	16 LVD	5.25" FH	N <sup>3</sup>	N	3503BOX <sup>4</sup> , 3551001
<b>Associated Options</b>							
32G3918	SCSI-2 16-bit Active Terminator	-	16	External	Y	N	3510020, 3503BOX
<b>External Tape Enclosures</b>							
3510020	External Half High SCSI Storage Enclosure <sup>6</sup>	-	8/16	Desktop	N	N	-
3551001	NetMEDIA Storage Expansion Unit EL <sup>7</sup>	-	16	Rack	Y	N	-
10L7113	NetMEDIA Systems Management Adapter <sup>8</sup>	-	16	-	N	N	3551001
3503BOX	DLT External SCSI Enclosure <sup>9</sup>	-	16	Desktop	N	N	-
<b>External Tape Libraries<sup>10</sup></b>							
3502108	DLT Tape Autoloader	-	16	Desktop	Y	-	-
3502x14	DLT Tape Library	-	16	Desktop or Rack	Y	-	-
3503108	DLT8000 Tape Autoloader	-	16 LVD	Desktop	Y	-	-
3503x14	DLT8000 Tape Library	-	16 LVD	Desktop or Rack	Y	-	-
3570xxx	Magstar MP 3570 Tape Subsystem (models B2x and C2x)	-	Diff.	Rack	Y	-	-

1. To determine cable requirements, note the tape drive's SCSI interface, the appropriate SCSI controller from the system configurator section, and the desired enclosure and then refer to Appendix D: Cables - Storage Units - Controllers.

2. Tape drive is capable of self termination.

3. Termination is provided by the system unit's standard SCSI cabling.

4. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).

5. Two Half-High (HH) bays can be combined to support a single Full-High (FH) device.

6. Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either tape drive self termination or SCSI-2 16-bit Active Terminator (P/N 32G3918).

7. Provides a black 3U, 19" rack or NetBAY3 mountable tape enclosure. Provides two full high (FH) or four half high (HH) extended length 5.25" bays. External connector is 0.8-mm VHDCL. Includes two power supplies and two power cords.

8. Installs in a 3551001. Provides repeater function and LVDS interface allowing longer cable lengths and auto-termination when the 3551001 is powered off.

9. Provides a black desktop DLT tape enclosure with a 68-pin high density external connector. Requires termination by the tape drive or by installation of a SCSI-2 16-bit Active Terminator (P/N 32G3918).

10. Tape library attributes and prerequisites are located in Appendix B: Tape Library Attributes.

NOTE: SCSI support for tape drives is provided by system unit onboard (standard) controller (no-RAID function) or PCI Fast Wide Ultra SCSI Adapter P/N 02K3454. Additional tape attributes can be found in Appendix A: Tape Drive Attributes.



## Sample Configurations

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

### High Availability

Part Number	Description	Quantity	Usage
8660-72U	Netfinity 5500 (Pentium III 550/128 MB, Tower & NetBAY3)	1	
01K8053	Netfinity 91 GB Wide Ultra SCSI SCA-2 SL HDD	6	NOS-mirrored, Data-RAID 5
01K1320	20/40 GB DLT Internal SCSI Tape Drive	1	
7852400	External V34 Data/Fax Modem	1	Remote Management
01K7951	Netfinity 400 W Hot-swap Redundant Power Supply II	1	
10L6912	Netfinity NetBAY3	1	Enclosure for second UPS
94G6674	APC Smart-UPS 1400RMB <sup>1</sup>	2	Redundant UPSs
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	

1. Even though a second UPS provides a redundant power source, systems management software does not currently take advantage of its power outage alerts.

This tower server is configured to act as the foundation for business critical applications, applications your business cannot afford to be without. Configured with enough disk drives to mirror the operating system and provide a standard RAID 5 environment for data, optional hot-swap redundant power, redundant UPSs for power even during a blackout or in the event of a UPS or power cord failure, this server represents the leading edge in high availability. An internal tape drive is included to back-up that all important asset.... data, and a modem is included to allow out-of-band (non-LAN) system management utilizing the Netfinity Advanced System Management Processor.

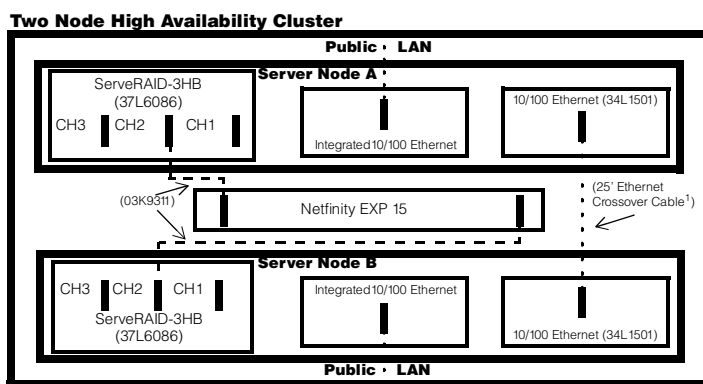
### Web Server

Part Number	Description	Quantity	Usage
8660-61U	Netfinity 5500 (Pentium III 500/128 MB, Tower & NetBAY3)	1	-
01K8023	128 MB SDRAM ECC DIMM	3	Total Memory: 512 MB
36L9806	Netfinity 91 GB 10K-3 Wide Ultra SCSI Hot-Swap SL HDD	6	RAID 5 Data Storage
footnote 1	High Speed ISDN connection <sup>1</sup>	1	Connection to Web
01K1320	20/40 GB DLT Internal SCSI Tape Drive	1	-
02K3454	PCI Fast/wide Ultra SCSI Adapter	1	Tape Controller
03K9313	Netfinity SCSI Controller Cable	1	Provides external RAID
10L6912	Netfinity NetBAY3	1	Enclosure for EXP15
35202RU	Netfinity EXP15	1	Provides additional 10 Bays
36L9809	Netfinity EXP 91 GB 10K-3 Wide Ultra SCSI Hot-Swap HDD	5	RAID 5 Data Storage
03K9310	Netfinity 2M Ultra2 SCSI Cable	1	Attaches EXP15 to 03K9313
01K7951	Netfinity 400 W Hot-Swap Redundant Power Supply II	1	-
94G6676	APC Smart-UPS 3000RMB <sup>2</sup>	2	Redundant UPSs
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	-

1. Select from ServerProven options found on the Web at URL [www.ibm.com/pc/us/compat](http://www.ibm.com/pc/us/compat). Warranty and service for third party ServerProven products is provided for by the manufacturer, not IBM.

2. Even though a second UPS provides a redundant power source, systems management software does not currently take advantage of its power outage alerts.

This tower model is configured as the perfect Web presence for a company ready for eBusiness. With enough disk storage to host a large sales catalog, an optional hot-swap power supply and UPS so that your server is ready when your customers are ready to order, and an ISDN adapter to allow for a speedy connection into the Web infrastructure, on top of all the integrated high-availability features make this the ideal server for electronic commerce.



1. Customer supplied Ethernet Crossover Cable may vary in length up to a maximum of 25' (7.6 m).

### Two Node High Availability Cluster

Part Number	Description	Quantity	Usage
<b>Server Nodes A &amp; B</b>			
8660-7SU	Netfinity 5500 (Pentium III 550/256 MB, Rack) (8U)	2	-
33L5112	Netfinity 550/512 KB Upgrade with Pentium III Processor	2	Dual SMP Processing
01K8053	Netfinity 91 GB Wide Ultra SCSI SCA-2 SL HDD	4	NOS on mirrored HDD's
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter <sup>2</sup>	2	3 channels for EXP15's
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2 <sup>1</sup>	2	Private Interconnect
00N7990	40/80 GB DLT Internal SCSI Tape Drive	1	
02K3454	PCI Fast/Wide Ultra SCSI Adapter	1	Tape Drive Controller
7852400	External V34 Data/Fax Modem	2	Remote Management
01K7951	Netfinity 400 W Hot-Swap Redundant Power Supply II	2	-
94G6676	APC Smart-UPS 3000RMB (3U)	2	-
<b>Storage Expansion Unit</b>			
35202RU	Netfinity EXP15 <sup>2</sup> (3U)	1	-
01K7959	Netfinity EXP10 91GB Wide Ultra SCSI SCA-2 HDD <sup>2</sup>	5	RAID 5 Shared Storage
03K9311	Netfinity 4.2M Ultra2 SCSI Cable <sup>2</sup>	2	Attach EXP15 to Servers
<b>Shared (or single occurrence) Resources</b>			
9513AG1	T55A Flat Panel Color Monitor (15" Viewable Image Size), stealth black	1	Mounts in keyboard tray
28L3644	Space Saver II Keyboard	1	-
<b>Industry Standard 19" Rack, EIA-310D, Min. depth of 28"</b>			
9306900	9306-900 Netfinity Rack	1	-
28L4707	Netfinity Rack Keyboard Tray	1	-
37L6857	Netfinity Flat Panel Monitor Rack-Mount Kit (3U)	1	Mounts in keyboard tray (3U)
28L0542	Netfinity Console Server Selector Switch (4-port)	1	-
94G6667	Power Cable-Type A14 <sup>3</sup>	3	-
94G7447	12ft. Console Cable Set	2	-
94G6669	Side Panel Kit	1	-
94G6670	Blank Filler Kit	2	-

1. Requires customer supplied Ethernet Crossover Cable which may vary in length up to a maximum of 25' (7.6 m).

2. By replicating these items, up to a total quantity of four ServeRAID-3HB Adapters (plus options) and eleven EXP15s can provide over 2 Terabytes of storage. Additional power and Rack space will be required.

3. Cable length requirements are dependant on component placement within the rack or rack suite. To determine specific configuration requirements use the Netfinity Rack Configurator which is downloadable from Web site [www.ibm.com/pc/us/netfinity/tech\\_library.html](http://www.ibm.com/pc/us/netfinity/tech_library.html) "Configuration Tools".

Clustering is a group of interconnected computers used as a single, unified computing resource. Clustering Netfinity servers, like the IBM Netfinity 5500, provides a high availability solution to keep you in touch with the key applications you need to run your business.

This sample configuration consists of paired IBM Netfinity 5500 cluster nodes equipped with two-way SMP capability and redundant power supplies. Microsoft Cluster Service (MSCS) has been validated on IBM Netfinity 5500 servers, using the IBM ServeRAID-3HB with the EXP15 Storage Expansion Unit. MSCS allows two configured servers, referred to as nodes, to be connected together to form a cluster. Providing system redundancy means that a complete server can fail and client access to server resources is largely unaffected. MSCS extends this theme by also allowing for software failures at an application level as well as an operating system level. If the operating system fails, all applications and services can be restarted on another server, and if just one application fails, it can be managed by MSCS individually. An additional independent network connection is used to perform monitoring within the cluster. One or more disk subsystems are attached to both nodes. In the above example, a Netfinity EXP15 was selected and the IBM ServeRAID-3HB Ultra2 SCSI Adapters provide the I/O control. Netfinity ServeRAID-3HB handles the "SCSI heartbeat" connection without the need for a dedicated SCSI connection and logically attaches the quorum disk, which allows arbitration when a failure occurs. Additional information on IBM Netfinity and IBM PC Server Clustering Solutions may be found on the World Wide Web by accessing URL [www.ibm.com/pc/us/netfinity/clustering.html](http://www.ibm.com/pc/us/netfinity/clustering.html).



# IBM Netfinity 5500 M10 Configurator

Part Number	Processor Speed (MHz)	Number of Processors (Std/Max)	L2 ECC Cache (KB)	Memory (Std/Max) (R = RDIMM) <sup>2</sup>	Form Factor	Power Supply Quantity (Std/Max)	Hot-Swap (Power, Slots, HDD, Fans)	Redundancy (Optional, Standard)	Adv. System Management Processor	Onboard Ethernet (Mbps)	SCSI Controller (Dual, Ultra, RAID, LVD)	Removable Media Bays (Total/Avail)	Internal Hard Disk Drive (Std/Max)	CD-ROM (IDE)	Bays: (Total/Avail)	Slots: (Total/Avail)
8661-51Y	550 <sup>6</sup>	1/2	512	256 MB (R)/2 GB	Tower <sup>3</sup>	1/2	P, S, H, F	S-Fans, O-Power	Y	10/100	D, R	4/2	0/109 GB <sup>4</sup>	32X-14X <sup>5</sup>	10/8	7/7
8661-5RY <sup>1</sup>	550 <sup>6</sup>	1/2	512	256 MB (R)/2 GB	Rack (8U)	1/2	P, S, H, F	S-Fans, O-Power	Y	10/100	D, R	4/2	0/109 GB	32X-14X <sup>5</sup>	10/8	7/7

1. Housed in a 19" Rack mountable drawer and ships standard without a keyboard or mouse. See "Rack and NetBay" under "Netfinity 5500 M10 Power, Monitor & Accessories" for supported IBM racks.
2. All memory is 100 MHz ECC SDRAM Registered DIMMs (RDIMMs) and is compatible with Netfinity Four-Way Processor Upgrade Kit (P/N 28L1014) which increases the maximum memory to 4 GB.
3. Tower models come equipped with a single NetBay3, 3U stackable enclosure. Up to a maximum of three are supported.
4. With a single Netfinity EXP15 installed in the standard NetBay3, the maximum internal storage increases by 364 MB.
5. Variable read rate. Actual playback speed will vary and is often less than the maximum possible.
6. Intel Pentium III Xeon processor.

## Netfinity 5500 M10 Processor Upgrades

Part Number	Processor Upgrades with 512 KB or 1 MB Cache	SMP Support <sup>1</sup>	Processor Speed/Cache Upgrade <sup>2</sup>	Upgrade 28L1014 Compatible
01K7264	Netfinity 5500 400 MHz/512 KB Upgrade with Pentium II Xeon Processor	All 1xY	-	-
10L5894	Netfinity 5500 400 MHz/1 MB Upgrade with Pentium II Xeon Processor	All 2xY	All 1xY	-
10L5901	Netfinity 5500 450 MHz/512 KB Upgrade with Pentium II Xeon Processor	All 3xY	All 1..2xY	X
10L5902	Netfinity 5500 450 MHz/1 MB Upgrade with Pentium II Xeon Processor	All 4xY	All 1..3xY	X
33L5107	Netfinity 550 550 MHz/512 KB Upgrade with Pentium III Xeon Processor	All 5xY	All 1..4xY	X
28L1014	Netfinity Four-Way Processor Upgrade Kit <sup>3, 4</sup>	-	All	-

1. One additional processor may be installed, providing a maximum of two. All processors must be identical in type, speed and cache size.
2. Requires removal of the standard processor. A maximum of two processors may be installed. All processors must be identical in type, speed and cache size. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access [www.ibm.com/pc/support](http://www.ibm.com/pc/support) and enter machine "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".
3. Provides required components for upgrading an IBM Netfinity 5500 or 5500 M10 to a 4-way SMP capable system. Installation of P/N 28L1014 prevents the use of PCI slot 6 and shortens slot 5 to Half Length. Installation must be performed by an IBM trained service or IBM Customer Engineer and is included in the purchase price. Key components include: memory card (4 GB capacity), processor card assembly power backplane, 500W power supply, assorted cables, led card, and chassis hardware. Components that are NOT included and must be ordered separately: processors, additional memory and 500 W redundant power supply. Optional processors supported by the four-way upgrade kit are indicated by an "X" in the column titled "Upgrade 28L1014 Compatible".
4. Processors from 8661-3xY and 8661-4xY are supported for use with upgrade kit P/N 28L1014. All others must be replaced when the upgrade kit is installed. Refer to Netfinity 5500 M20 configurator for option compatibility with any 5500 or 5500 M10 containing upgrade P/N 28L1014. A maximum of four processors may be installed. All processors must be identical in type, speed and cache size. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access [www.ibm.com/pc/support](http://www.ibm.com/pc/support) and enter machine "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".



## Netfinity 5500 M10 Memory

RDIMM Slot 1 - J4
RDIMM Slot 2 - J3
RDIMM Slot 3 - J2
RDIMM Slot 4 - J1

Standard RDIMM

Part Number	Memory Description
01K7262	Netfinity 128 MB SDRAM ECC RDIMM <sup>1</sup>
01K8043	Netfinity 256 MB SDRAM ECC RDIMM <sup>1</sup>
01K7263	Netfinity 512 MB SDRAM ECC RDIMM <sup>1</sup>

1. RDIMMs must be installed in sequence beginning with Slot 4 (J1) and ordered from largest to smallest.

Total Memory	Models 8661-1...4xY	Models 8661-5xY
128 MB	128 MB RDIMM Standard	-
256 MB	1 x 01K7262	256 MB RDIMM Standard
384 MB	1 x 01K8043	1 x 01K7262
512 MB	1 x 01K7262, 1 x 01K8043	1 x 01K8043
640 MB	1 x 01K7263 or 2 x 01K8043 <sup>2</sup>	1 x 01K7262, 1 x 01K8043
768 MB	(1 x 01K7262, 1 x 01K7263) or (1 x 01K7262, 2 x 01K8043) <sup>2</sup>	1 x 01K7263 or 2 x 01K8043 <sup>2</sup>
896 MB	(1 x 01K8043, 1 x 01K7263) or 3 x 01K8043 <sup>2</sup>	(1 x 01K7262, 1 x 01K7263) or (1 x 01K7262, 2 x 01K8043) <sup>2</sup>
1024 MB	2 x 01K7263 or 4 x 01K8043 <sup>1,2</sup>	(1 x 01K8043, 1 x 01K7263) or 3 x 01K8043 <sup>2</sup>
1280 MB	1 x 01K7262 or 2 x 01K7263	2 x 01K7263 or (2 x 01K8043, 1 x 01K7263) <sup>2</sup>
1408 MB	1 x 01K8043, 2 x 01K7263	1 x 01K7262, 2 x 01K7263
1664 MB	3 x 01K7263	-
1792 MB	-	3 x 01K7263
2048 MB (max)	4 x 01K7263 <sup>1</sup>	4 x 01K7263 <sup>1</sup>

This table does not represent all possible memory configurations.

1. Replace standard RDIMM.

2. Memory modules may vary in price per MB. Selection of smaller RDIMMs may provide a more cost-effective alternative to using the largest RDIMMs and should be considered when anticipated future memory is 1 GB or less.

## Netfinity 5500 M10 Hard Disk Drive (HDD) Storage

Total Int. Storage <sup>1</sup>	7200 RPM Hard Disk Drives (HDDs)			10,000 RPM Hard Disk Drives (HDDs)		
	9.1 GB	18.2 GB	36.4 GB	9.1 GB	18.2 GB	36.4 GB
0 GB	Standard on Base Models			Standard on Base Models		
91 GB	1 x 01K8053	-	-	1 x 36L9806	-	-
18.2GB	2 x 01K8053 or	1 x 02K0440		2 x 36L9806 or	1 x 36L9807	-
272 GB	3 x 01K8053	-	-	3 x 36L9806	-	-
36.4 GB	4 x 01K8053 or	2 x 02K0440 or	1 X 02K0441	4 x 36L9806 or	2 x 36L9807 or	1 x 36L9808
45.5 GB	5 x 01K8053	-	-	5 x 36L9806	-	-
54.6GB	6 x 01K8053 or	3 x 02K0440	-	6 x 36L9806 or	3 x 36L9807	-
72.8 GB	-	4 X 02K0440 or	2 X 02K0441	-	4 x 36L9807 or	2 x 36L9808
91 GB	-	5 X 02K0440	-	-	5 x 36L9807	-
109 GB (max)	-	6 X 02K0440 or	3 X 02K0441	-	6 x 36L9807 or	3 x 36L9808

This table does not represent all possible hard drive configurations.

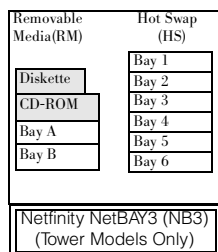
1. Total internal storage listed is within  $\pm$  0.2 GB unless otherwise noted.



Bay	Form Factor	Height	Front Access	Usage	Part Number	Description	RPM	Height	Bays Supported	Max. Qty.
-	3.5"	SL	Yes	Diskette	<b>Internal Hard Disk Drives (HDD)</b>					
-	5.25"	HH	Yes	IDE CD-ROM	01K8053	Netfinity 91 GB Wide Ultra SCSI SCA-2 SL HDD	7200	SL	1..6	6
A	5.25"	HH <sup>1</sup>	Yes	Open	02K0440	Netfinity 18.2 GB Wide Ultra SCSI Hot-Swap SL HDD	7200	SL	1..6	6
B	5.25"	HH <sup>1</sup>	Yes	Open	02K0441	Netfinity 36.4 GB Wide Ultra SCSI Hot-Swap HDD	7200	HH <sup>1</sup>	1/2, 3/4, 5/6	3
1..6	HS	SL <sup>2</sup>	Yes	Open	36L9806	Netfinity 91 GB 10K-3 Wide Ultra SCSI Hot-Swap SL HDD	10,000	SL	1..6	6
NB3 <sup>3</sup>	19" Rack	3U	Yes	Open	36L9807	Netfinity 18.2 GB 10K-3 Wide Ultra SCSI Hot-Swap SL HDD	10,000	SL	1..6	6
					36L9808	Netfinity 36.4 GB 10K-3 Wide Ultra SCSI Hot-Swap HDD	10,000	HH <sup>1</sup>	1/2, 3/4, 5/6	3
<b>External Storage Expansion Units<sup>2</sup></b>							<b>Form Factor</b>			
35202RU						Netfinity EXP15 Storage Expansion Unit	Rack (3U)			
35301RU						Netfinity EXP200 Storage Expansion Unit	Rack (3U)			
37L5857						Netfinity EXP200 Rack-to-Tower Conversion Kit	Tower			

- Two half-high (HH) bays can be combined to support a single full-high device.
- Two slim-line (SL) bays can be combined to support a single half-high device.
- One NetBAY3 is included with tower models and a total of three are supported. See IBM Netfinity NetBAY3 Stackable Enclosure section for supported devices.

- Two slim-line (SL) bays can be combined to support a single half-high (HH) device.
- Supported by the onboard external SCSI port (requires Netfinity SCSI Controller Cable P/N 03K9313). Select the onboard or optional SCSI controller then refer to Appendix D: Cables-Storage Units-Controllers to confirm the controller supports the desired External Storage Expansion Unit and to select a supported cable. For HDD or other expansion unit options, see the specific expansion unit section.



### Internal SCSI Cabling

Netfinity 5500 and 5500 M10 systems contain a backplane supporting six hot-swap drive bays. The backplane is connected to one of the two connectors of the integrated dual-channel ServeRAID controller through a 16-bit SCSI cable. A two-drop 16-bit SCSI cable, with an integrated terminator, is included with the server to support up to two internal removable media devices connected to the second RAID connector or a supported SCSI adapter. Optional Netfinity SCSI Controller Cable (P/N 03K9313) is a 16-bit cable that can be attached to the second RAID connector and routed to the rear panel cutout providing an external 16-bit VHDCI 0.8 mm connector. If internal removable devices are required in addition to external RAID device attachment, a supported SCSI adapter must be installed using the standard two-drop SCSI cable for device/adapter connection. If connecting narrow devices to this cable, additional 68-pin to 50-pin converters (P/N 32G3925) must be ordered. Some narrow devices include a converter in their ship group.





## Netfinity 5500 M10 I/O Options

Part Number	Description	Adapter Length	PCI Support	Slots Supported <sup>1</sup>	Hot-Plug <sup>2</sup>
<b>Storage Controllers<sup>3</sup></b>					
01K7364	Netfinity ServeRAID-3L Ultra2 SCSI Adapter <sup>4, 5</sup>	Full	32-bit	1..6	X
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter <sup>5</sup>	Full	32/64-bit	1..6	X
02K3454	PCI Fast/Wide Ultra SCSI Adapter	Half	32-bit	1..6	-
01K7297	Netfinity Fibre Channel PCI Adapter <sup>7</sup>	Half	32/64-bit	1..6	-
09L2123	Advanced SerialRAID/X Adapter	Full	32-bit	1..6 <sup>8</sup>	-
<b>Networking<sup>9</sup></b>					
<b>Ethernet</b>					
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2	Half	32-bit	1..6	X
08L3341	Netfinity 10/100 Fault Tolerant Adapter	Half	32-bit	1..6	X
34L0301	Netfinity Gigabit Ethernet SX Adapter	Half	32/64-bit	1..6	X
<b>Token Ring</b>					
34L0501	Token-Ring 100/16/4 High-Speed PCI Adapter	Half	32-bit	1..6	-
34L0601	Token-Ring 16/4 PCI Adapter 2	Half	32-bit	1..6	-
<b>Communications</b>					
33L4618	PCI V90 56 Data/Fax Modem <sup>10</sup>	Half	32-bit	1..6	-
37L1414	Serial I/O SST8P DB Adapter <sup>11</sup>	Half	32-bit	1..6 <sup>11</sup>	-
37L1415	Serial I/O SST16P RJ Adapter <sup>11</sup>	Half	32-bit	1..6 <sup>11</sup>	-
37L1423	Serial I/O SST16P DB Adapter <sup>11</sup>	Half	32-bit	1..6 <sup>11</sup>	-
37L1416	Serial I/O SST128P Expandable Adapter <sup>11</sup>	Half	32-bit	1..6 <sup>11</sup>	-
<b>Systems Management<sup>12</sup></b>					
01K7209	Netfinity Advanced System Management PCI Adapter <sup>13</sup>	Full	32-bit	1..6 <sup>14</sup>	-
03K9309	Netfinity Advanced System Management Interconnect Cable Kit <sup>15</sup>	-	-	-	-
36L9654	Netfinity Advanced System Management Token-Ring Connection <sup>16</sup>	-	-	-	-
<b>Host Attach</b>					
9086001	Netfinity ESCON Adapter <sup>17</sup>	Full	32-bit	1..6 <sup>18</sup>	-

ISA, Full Length
Slot 1- PCI, Hot-Plug, 32-bit, Full Length
Slot 2- PCI, Hot-Plug, 32-bit, Full Length
Slot 3- PCI, Hot-Plug, 32-bit, Full Length
Slot 4- PCI, Hot-Plug, 32-bit, Full Length
Slot 5- PCI, 32-bit, Primary Bus, Full Length
Slot 6- PCI, 32-bit Primary Bus, Full Length

1. PCI Slots 1, 2, 3 and 4 support Hot Plug devices.

2. Hot Plug capable using IBM's Active PCI technology. For Network Operating System support access URL [www.ibm.com/pc/us/compat](http://www.ibm.com/pc/us/compat).

3. Netfinity 5500 and 5500 Mxx have a dual-channel ServeRAID II Wide Ultra SCSI controller.

4. All ServeRAID-3x adapters can be upgraded with the same enhanced software utilities and firmware included with ServeRAID-3HB. The download is available for no charge from [www.ibm.com/pc/support](http://www.ibm.com/pc/support). Select "Server" in Brand pulldown, "ServeRAID" in Family pulldown and then "Downloadable files". The upgrade should be considered for installations with firmware less than Version 3.5.

5. Netfinity ServeRAID-3L Ultra2 SCSI Adapter (P/N 01K7364) provides either one internal or one external (0.8 mm VHDCI) LVDS SCSI channel.

6. Netfinity ServeRAID-3HB Ultra2 SCSI Adapter (P/N 37L6086) provides one internal and two external (0.8 mm VHDCI) LVDS SCSI channels. The internal channel can be configured for external usage (0.8 mm VHDCI) providing a total of three external LVDS SCSI channels. Includes 32 MB of mirrored battery-backup cache, which helps protect against data loss in write-back cache mode in the event of a power outage or adapter maintenance.

7. See Netfinity Fibre Channel Solutions section for additional configuration information.

8. A maximum quantity of four is supported.

9. Netfinity 5500 and 5500 Mxx have an integrated 10/100 PCI Ethernet Controller.

10. Due to homologation variances, modem availability may differ by country.

11. See Appendix E for details on Serial I/O options and configuration limitations. A maximum of four Serial I/O adapters (any combination of P/N 37L1414, 37L1415, 37L1416, 37L1423) may be installed.

12. The Netfinity Advanced System Management Processor and Interconnect Bus integrated into Netfinity 5500 (8660-5..6xU) and 5500 Mxx works with Netfinity Manager to provide significant system management function. When used with optional Netfinity Advanced System Management PCI Adapter (P/N 01K7209) and Netfinity Advanced System Management Interconnect Cable Kit (P/N 03K9309) additional management and control of up to 12 service processors from a remote console through a single modem or LAN connection is possible. Systems management options P/N 01K7209, 03K9309, and 36L9654 are NOT supported by Netfinity 5500 models 8660-1..4xU.

13. Includes PCI adapter, Netfinity Advanced Systems Management Interconnect Cable Kit components and 56-watt AC adapter, which requires a separate power source. Provides an integrated 10/100 Ethernet port and a PCMCIA slot to support optional Netfinity Advanced System Management Token-Ring Connection (P/N 36L9654). NOT supported by Netfinity 5500 models 8660-1..4xU.

14. A maximum quantity of one is supported.

15. Required for all Netfinity Servers containing a standard Advanced System Management Processor that are to be interconnected for system management support through a LAN or modem connection (Netfinity 5500 models 8660 1..4xU are not supported). Optional Netfinity Advanced System Management PCI Adapter (P/N 01K7209) includes the contents of this option. Up to 12 service processors may be interconnected (including standard and optional processors) with an aggregate connection length of no more than 91.4 meters (300 ft.). A customer-supplied Ethernet cable is required for each interconnection.

16. Contains an IBM Turbo 16/4 Token-Ring PCI Card, which installs in the PCMCIA card slot of Netfinity Advanced System Management PCI Adapter (P/N 01K7209), and a PC Card to 9-pin D-Shell cable which is routed to a rear chassis cut-out. The Netfinity Advanced System Management PCI Adapter's integrated Ethernet port and Netfinity Advanced System Management Token-Ring Connection cannot be connected or used together.

17. Provides an ESCON MIC and DB9 Serial Port. Cables are not included but are available through S/390 channels. Contact your IBM representative for additional information.

18. A maximum of two 9086001 adapters (installed in non-adjacent slots) are supported in a single Netfinity server.



## Netfinity 5500 M10 Power, Monitor & Accessories

Part Number	Description
<b>Power<sup>1</sup></b>	
01K7951	Netfinity 400 W Hot-Swap Redundant Power Supply II <sup>2</sup>
<b>Uninterruptible Power Supply (UPS)<sup>3</sup></b>	
94G3136	APC Smart-UPS 1400 (26 min. runtime at 375 Watts)
94G6674	APC Smart-UPS 1400 RMB (21 min. runtime at 375 Watts) <sup>4</sup>
94G6676	APC Smart-UPS 3000 RMB (55 min. runtime at 375 Watts) <sup>4</sup>
<b>Monitors</b>	
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black <sup>5</sup>
65474AN	G74 Color Monitor 17" (15.9" Viewable Image Size), stealth black <sup>5</sup>
65494AN	G96 Color Monitor 19" (17.9" Viewable Image Size), stealth black <sup>6</sup>
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black <sup>7</sup>
<b>Cables</b>	
03K9313	Netfinity SCSI Controller Cable (0.8 mm) <sup>8</sup>
32G3925	SCSI 68-pin to 50-pin Converter

1. Netfinity 5500 and 5500 M10 include a single 400W power supply which is sufficient to operate fully configured systems. If power supply redundancy is desired, optional power supply P/N 01K7951 is required.
2. Includes a power cord which requires an additional power source. Even though a second UPS provides a redundant power source, systems management software does not currently take advantage of its power outage alerts.
3. Stated runtimes and power are for typical configurations (approximately 70% of maximum capacity). For additional information see Appendix C: UPS Runtime Estimate.
4. Height is 3U. See "Rack and NetBAY" for supported IBM racks.
5. Installation within a rack requires optional Monitor Compartment (P/N 94G7444).
6. Not supported for installation in a 19" rack.
7. Installation within a rack requires optional Netfinity Flat Panel Monitor Rack Mount Kit (P/N 37L6857) and Netfinity Rack Keyboard Tray (P/N 28L4707). A space saver keyboard may coexist within the same 28L4707 keyboard tray.
8. Used for routing the second internal SCSI RAID channel to an external .8 mm VHDCI connector. Can be used with IBM .8 mm to 68-pin SCSI Adapter (P/N 01K8017) to provide an external 68-pin high density connector.

Part Number	Description
<b>Conversion Kits</b>	
01K8021	Netfinity 5500 Rack-to-Tower Kit <sup>1</sup>
01K8020	Netfinity 5500 Tower-to-Rack Kit
<b>Rack and NetBAY<sup>2</sup></b>	
930842P	Netfinity Enterprise Rack
930842X	Netfinity Enterprise Expansion Cabinet
9306900	Netfinity Rack
9306200	Netfinity NetBAY22
10L6912	Netfinity NetBAY3 <sup>3</sup>
10L6913	Netfinity Caster Set
<b>Keyboard and Mouse<sup>4</sup></b>	
28L3644	Space Saver II Keyboard <sup>5,7</sup>
01K1260	TrackPoint IV 104-Key Black Keyboard <sup>6,7</sup>
28L3621	Preferred Keyboard (stealth black) <sup>5</sup>
28L3673	Sleek 2-Button Stealth Black Mouse

1. Includes one Netfinity NetBAY3 with skid pads. Optional casters (P/N 10L6913) are available.
2. Netfinity 5500 and 5500 Mxx rack models are housed in a 19" rack mountable drawer and require one of the racks listed here. Tower models include a single NetBAY3 with skid pads. Optional casters (P/N 10L6913) are available. See IBM Netfinity Rack Cabinet and Options section for IBM rack NetBAY3 with skid pads. Optional casters (P/N 10L6913) are available. See IBM Netfinity Rack supported devices.
3. A maximum of three NetBAY3 enclosures (including the standard one) may be stacked beneath a supported Netfinity tower server. Casters are not included. See IBM Netfinity NetBAY3 Stackable Enclosure section for supported devices.
4. Tower models include both a mouse and keyboard. Rack models include neither.
5. Installation within a rack requires optional keyboard tray P/N 28L4707 (stows in "ready-to-use" position).
6. Installation within a rack requires optional keyboard tray P/N 28L4707. This keyboard cannot share a keyboard tray with a flat panel display.
7. Advanced TrackPoint IV features are not available on IBM Netfinity systems.



## Netfinity 5500 M10 Tape Options

Part Number	Description	Bays Supported	SCSI Interface (bit)	Form Factor	Termination Included	68/50-pin Converter Incl.	Ext. Tape Encl. <sup>1</sup>
01K1282	12/24 GB DDS/3 4-mm Internal Tape Drive	A, B	8	3.5" HH or 5.25" HH	Y <sup>2</sup>	Y	3510020
00N7991	20/40 GB DDS/4 4-mm Internal Tape Drive	A, B	16 Ultra2 LVD	3.5" HH or 5.25" HH	Y <sup>2</sup>	N	3510020 3551001
01K1325	20/40 GB 8-mm Internal SCSI Tape Drive	A, B	16	5.25" HH	N <sup>3</sup>	N	3510020 <sup>4</sup> 3551001
01K1320	20/40 GB DLT Internal SCSI Tape Drive	A/B <sup>5</sup>	8	5.25" FH	Y <sup>2</sup>	Y	3503BOX, 3551001
04K0149	35/70 GB DLT Internal SCSI Tape Drive	A/B <sup>5</sup>	16	5.25" FH	N <sup>3</sup>	N	3503BOX <sup>4</sup> , 3551001
00N7990	40/80 GB DLT Internal SCSI Tape Drive	A/B <sup>5</sup>	16 LVD	5.25" FH	N <sup>3</sup>	N	3503BOX <sup>4</sup> , 3551001
<b>Associated Options</b>							
32G3918	SCSI-2 16-bit Active Terminator	-	16	External	Y	N	3510020, 3503BOX
<b>External Tape Enclosures</b>							
3510020	External Half High SCSI Storage Enclosure <sup>6</sup>	-	8/16	Desktop	N	N	-
3551001	NetMEDIA Storage Expansion Unit EL <sup>7</sup>	-	16	Rack	Y	N	-
10L7113	NetMEDIA Systems Management Adapter <sup>8</sup>	-	16	-	N	N	3551001
3503BOX	DLT External SCSI Enclosure <sup>9</sup>	-	16	Desktop	N	N	-
<b>External Tape Libraries<sup>10</sup></b>							
3502108	DLT Tape Autoloader	-	16	Desktop	Y	-	-
3502x14	DLT Tape Library	-	16	Desktop or Rack	Y	-	-
3503108	DLT8000 Tape Autoloader	-	16 LVD	Desktop	Y	-	-
3503x14	DLT8000 Tape Library	-	16 LVD	Desktop or Rack	Y	-	-
3570xxx	Magstar MP 3570 Tape Subsystem (models B2x and C2x)	-	Diff.	Rack	Y	-	-

- To determine cable requirements, note the tape drive's SCSI interface, the appropriate SCSI controller from the system configurator section, and the desired enclosure and then refer to Appendix D: Cables - Storage Units - Controllers.
- Tape drive is capable of self termination.
- Termination is provided by the system unit's standard SCSI cabling.
- Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).
- Two Half-High (HH) bays can be combined to support a single Full-High (FH) device.
- Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either tape drive self termination or SCSI-2 16-bit Active Terminator (P/N 32G3918).
- Provides a black 3U, 19" rack or NetBAY3 mountable tape enclosure. Provides two full high (FH) or four half high (HH) extended length 5.25" bays. External connector is 0.8-mm VHDCI. Includes two power supplies and two power cords.
- Installs in a 3551001. Provides repeater function and LVDS interface allowing longer cable lengths and auto-termination when the 3551001 is powered off.
- Provides a black desktop DLT tape enclosure with a 68-pin high density external connector. Requires termination by the tape drive or by the tape drive or by installation of a SCSI-2 16-bit Active Terminator (P/N 32G3918).
- Tape library attributes and prerequisites are located in Appendix B: Tape Library Attributes.

NOTE: SCSI support for tape drives is provided by system unit onboard (standard) controller (no-RAID function) or PCI Fast Wide Ultra SCSI Adapter P/N 02K3454. Additional tape attributes can be found in Appendix A: Tape Drive Attributes.

## Sample Configurations

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

### High Availability

Part Number	Description	Quantity	Usage
8661-51Y	Netfinity 5500 M10 (Pentium III Xeon 550/256 MB/0 GB, Tower & NetBAY3)	1	-
01K8053	Netfinity 9.1 GB Wide Ultra SCSI SCA-2 SL HDD	6	NOS-mirrored, Data-RAID 5
01K1320	20/40 GB DLT Internal SCSI Tape Drive	1	-
7852400	External V34 Data/Fax Modem	1	Remote Management
01K7951	Netfinity 400W Hot-Swap Redundant Power Supply II	1	-
10L6912	Netfinity NetBAY3	1	Enclosure for second UPS
94G6674	APC Smart-UPS 1400 RMB <sup>1</sup>	2	Redundant UPS
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	-

- Even though a second UPS provides a redundant power source, systems management software does not currently take advantage of its power outage alerts.



This tower server is configured to act as the foundation for business critical applications, applications your business cannot afford to be without. Configured with enough disk drives to mirror the operating system and provide a standard RAID 5 environment for data, optional hot-swap redundant power and redundant UPSs for power even during a blackout or in the event of a UPS or power cord failure, this server represents the leading edge in high availability. An internal tape drive is included to back up that all important asset..... data, and a modem is included to allow out-of-band (non-LAN) system management utilizing the Netfinity Advanced System Management Processor.

### Web Server

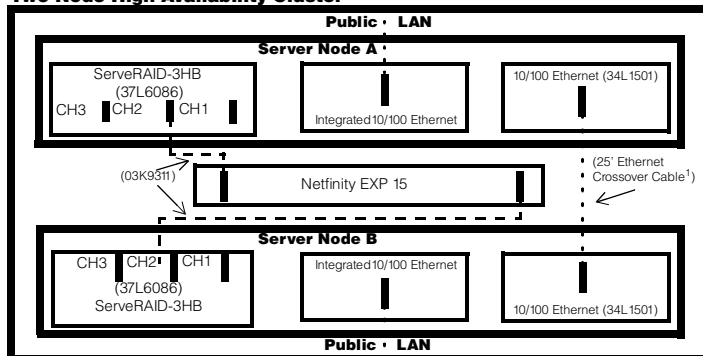
Part Number	Description	Quantity	Usage
8661-51Y	Netfinity 5500 M10 (Pentium III 550/256 MB/0 GB, Tower & NetBAY3)	1	-
01K7262	Netfinity 128 MB SDRAM ECC RDIMM	1	
01K8043	Netfinity 256 MB SDRAM ECC RDIMM	1	Total Memory: 640 MB
36L9806	Netfinity 9.1 GB 10K-3 Wide Ultra SCSI Hot-Swap SL HDD	6	RAID 5 Data Storage
footnote 1	High Speed ISDN Connection <sup>1</sup>	1	Connection to Web
01K1320	20/40 GB DLT Internal SCSI Tape Drive	1	-
02K3454	PCI Fast/Wide Ultra SCSI Adapter	1	Tape Controller
03K9313	Netfinity SCSI Controller Cable	1	Provides external RAID
10L6912	Netfinity NetBAY3	1	Enclosure for EXP15
35202RU	Netfinity EXP15	1	Provides additional 10 Bays
36L9809	Netfinity EXP 9.1 GB 10K-3 Wide Ultra SCSI Hot-Swap HDD	5	RAID 5 Data Storage
03K9310	Netfinity 2 M Ultra2 SCSI Cable	1	Attaches EXP15 to 03K9313
01K7951	Netfintiy 400W Hot-Swap Redundant Power Supply II	1	-
94G6676	APC Smart-UPS 3000 RMB <sup>2</sup>	2	Redundant UPSs
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	-

1. Select from ServerProven options found on the Web at URL [www.ibm.com/pc/us/compat](http://www.ibm.com/pc/us/compat). Warranty and service for third party ServerProven products is provided for by the manufacturer, not IBM.

2. Even though a second UPS provides a redundant power source, systems management software does not currently take advantage of its power outage alerts.

This tower model is configured as the perfect Web presence for a company ready for eBusiness. With enough disk storage to host a large sales catalog, an optional hot-swap power supply and UPS so that your server is ready when your customers are ready to order, and an ISDN adapter to allow for a speedy connection into the Web infrastructure, on top of all the integrated high-availability features make this the ideal server for electronic commerce.

### Two Node High Availability Cluster



1. Customer supplied Ethernet Crossover Cable may vary in length up to a maximum of 25' (7.6 m).

### Two Node High Availability Cluster

Part Number	Description	Quantity	Usage
<b>Server Nodes A &amp; B</b>			
8661-5RY	Netfinity 5500 M10 (Pentium III Xeon 550/256MB Rack) (8U)	2	-
33L5107	Netfinity 550 MHz/512 KB Upgrade with Pentium III Xeon Processor	2	Dual SMP Processing
01K8053	Netfinity 9.1 GB Wide Ultra SCSI SCA-2 SL HDD	4	NOS on mirrored HDDs
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter <sup>2</sup>	2	Three channels for EXP15s
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2 <sup>1</sup>	2	Private Interconnect
00N7990	40/80 GB DLT Internal SCSI Tape Drive	1	
02K3454	PCI Fast/Wide Ultra SCSI Adapter	1	Tape Drive Controller
7852400	External V34 Data/Fax Modem	2	Remote Management
01K7951	Netfinity 400 W Hot-Swap Redundant Power Supply II	2	-
94G6676	APC Smart-UPS 3000RMB (3U)	2	-
<b>Storage Expansion Unit</b>			
35202RU	Netfinity EXP15 <sup>2</sup> (3U)	1	-
01K7959	Netfinity EXP10 9.1 GB Wide Ultra SCSI SCA-2 HDD <sup>2</sup>	5	RAID 5 Shared Storage
03K9311	Netfinity 4.2 M Ultra2 SCSI Cable <sup>2</sup>	2	Attach EXP15 to Servers
<b>Shared (or single occurrence) Resources</b>			
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black	1	Mounts in keyboard tray
28L3644	Space Saver II Keyboard	1	-
<b>Industry Standard 19" Rack, EIA-310D, Min. depth of 28"</b>			
9306900	9306-900 Netfinity Rack	1	-
28L4707	Netfinity Rack Keyboard Tray	1	-
37L6857	Netfinity Flat Panel Monitor Rack-Mount Kit (3U)	1	Mounts in keyboard tray
28L0542	Netfinity Console Server Selector Switch (4-port)	1	-
94G6667	Power Cable-Type A14 <sup>3</sup>	3	-
94G7447	12ft. Console Cable Set	2	-
94G6669	Side Panel Kit	1	-
94G6670	Blank Filler Kit	2	-

1. Requires customer supplied Ethernet Crossover Cable which may vary in length up to a maximum of 25' (7.6 m).

2. By replicating these items, up to a total quantity of four ServeRAID-3HB Adapters (plus options) and eleven EXP15s can provide over 2 Terabytes of storage. Additional power and rack space will be required.

3. Cable length requirements are dependant on component placement within the rack suite. To determine specific configuration requirements use the Netfinity Rack Configurator which is downloadable from the Web site [www.ibm.com/pc/us/netfinity/tech\\_library.html](http://www.ibm.com/pc/us/netfinity/tech_library.html) "Configuration Tools".

Clustering is a group of interconnected computers used as a single, unified computing resource. Clustering Netfinity servers, like the IBM Netfinity 5500 M10, provides high availability solution to keep you in touch with the key applications you need to run your business.

This sample configuration consists of paired IBM Netfinity 5500 M10 cluster nodes equipped with two-way SMP capability and redundant power supplies. Microsoft Cluster Service (MSCS) has been validated on IBM Netfinity 5500 M10 servers, using the Netfinity ServeRAID-3HB Storage Expansion Unit. MSCS allows two configured servers, referred to as nodes, to be connected together to form a cluster. Providing system redundancy means that a complete server can fail and client access to server resources is largely unaffected. MSCS extends this theme by also allowing for software failures at an application level as well as an operating system level. If the operating system fails, all applications and services can be restarted on another server, and if just one application fails, it can be managed by MSCS individually. An additional independent network connection is used to perform monitoring within the cluster. One or more disk subsystems are attached to both nodes. In the above example, a Netfinity EXP15 was selected and the Netfinity ServeRAID-3HB Ultra2 SCSI Adapters provide the I/O control. Netfinity ServeRAID-3HB handles the "SCSI heartbeat" connection without the need for a dedicated SCSI connection and logically attaches to the quorum disk, which allows arbitration when a failure occurs. Additional information on IBM Netfinity and IBM PC Server Clustering Solutions may be found on the World Wide Web by accessing URL [www.ibm.com/pc/us/netfinity/clustering.html](http://www.ibm.com/pc/us/netfinity/clustering.html).



# IBM Netfinity 5500 M20 Configurator

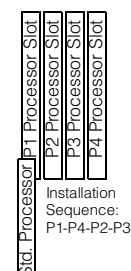
Part Number	Processor Speed (MHz) <sup>2</sup>	Number of Processors (Std/Max)	L2 ECC Cache (KB)	Memory (Std/Max) (R=RDIMM)	Form Factor	Power Supply Quantity (Std/Max)	Hot-Swap (Power, Slots, HDD, Fans)	Redundancy (Optional, Standard)	Adv. System Management Process	Onboard Ethernet	SCSI Controller (Dual, Ultra, RAID, LVD)	Removable Media Bays (Total/Avail)	Internal Hard Disk Drive (Std/Max)	CD-ROM (IDE)	Bays: (Total/Avail)	Slots: (Total/Avail)
8662-31Y	500	1/4	512	256 MB(R)/4 GB	Tower <sup>3</sup>	1/2	P, S, H, F	S-Fans, O-Power	Y	10/100	D, R	4/2	0/109 GB <sup>4</sup>	32X-14X <sup>5</sup>	10/ 8	6/6
8662-3RY <sup>1</sup>	500	1/4	512	256 MB(R)/4 GB	Rack (8U)	1/2	P, S, H, F	S-Fans, O-Power	Y	10/100	D, R	4/2	0/109 GB	32X-14X <sup>5</sup>	10/ 8	6/6
8662-41Y	500	1/4	1024	256 MB(R)/4 GB	Tower <sup>3</sup>	1/2	P, S, H, F	S-Fans, O-Power	Y	10/100	D, R	4/2	0/109 GB <sup>4</sup>	32X-14X <sup>5</sup>	10/ 8	6/6
8662-4RY <sup>1</sup>	500	1/4	1024	256 MB(R)/4 GB	Rack (8U)	1/2	P, S, H, F	S-Fans, O-Power	Y	10/100	D, R	4/2	0/109 GB	32X-14X <sup>5</sup>	10/ 8	6/6
8662-51Y	550	1/4	512	256 MB(R)/4 GB	Tower <sup>3</sup>	1/2	P, S, H, F	S-Fans, O-Power	Y	10/100	D, R	4/2	0/109 GB <sup>4</sup>	40X-17X <sup>5</sup>	10/ 8	6/6
8662-5RY <sup>1</sup>	550	1/4	512	256 MB(R)/4 GB	Rack (8U)	1/2	P, S, H, F	S-Fans, O-Power	Y	10/100	D, R	4/2	0/109 GB	40X-17X <sup>5</sup>	10/ 8	6/6
8662-61Y	550	1/4	1024	256 MB(R)/4 GB	Tower <sup>3</sup>	1/2	P, S, H, F	S-Fans, O-Power	Y	10/100	D, R	4/2	0/109 GB <sup>4</sup>	40X-17X <sup>5</sup>	10/ 8	6/6
8662-6RY <sup>1</sup>	550	1/4	1024	256 MB(R)/4 GB	Rack (8U)	1/2	P, S, H, F	S-Fans, O-Power	Y	10/100	D, R	4/2	0/109 GB	40X-17X <sup>5</sup>	10/ 8	6/6

1. Housed in a 19" Rack mountable drawer and ships standard without a keyboard or mouse. See "Rack and NetBay" under "Netfinity 5500 M20 Power, Monitor & Accessories" for supported IBM racks.
2. Intel Pentium III Xeon processor.
3. Tower models come equipped with a single NetBAY3 (3U) stackable enclosure. Up to a maximum of three are supported.
4. With a single Netfinity EXP15 installed in the standard NetBAY3 the maximum internal storage increases by 364 GB.
5. Variable read rate. Actual playback speed will vary and is often less than the maximum possible.

## Netfinity 5500 M20 Processor Upgrades

Part Number	Processor Upgrades with 512 KB or 1 MB Cache	SMP Support <sup>1</sup>	Processor Speed/Cache Upgrade <sup>2</sup>
10L5901	Netfinity 5500 450 MHz/512 KB Upgrade with Pentium II Xeon Processor <sup>3</sup>	-	Footnote 3
10L5902	Netfinity 5500 450 MHz/1 MB Upgrade with Pentium II Xeon Processor <sup>3</sup>	-	Footnote 3
33L5053	Netfinity 500 MHz/512 KB Upgrade with Pentium III Xeon Processor	All 3xY	-
33L5054	Netfinity 500 MHz/1 MB Upgrade with Pentium III Xeon Processor	All 4xY	All 3xY
33L5107	Netfinity 550 MHz/512 KB Upgrade with Pentium III Xeon Processor	All 5xY	All 3...4xY
33L5108	Netfinity 550 MHz/1 MB Upgrade with Pentium III Xeon Processor	All 6xY	All 3...5xY

1. Up to three additional processors may be installed, providing a maximum of four. All processors must be identical in type, speed and cache size.
2. Requires removal of the standard processor. A maximum of four processors may be installed. All processors must be identical in type, speed and cache size. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access [www.ibm.com/pc/support](http://www.ibm.com/pc/support) and enter machine "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".
3. Although supported by all Netfinity 5500 M20 models, these processors are intended for use with Netfinity Four-Way Processor Upgrade Kit (P/N 28L 1014) to provide investment protection when upgrading 5500 M10 models already containing one or more of these processors.





## Netfinity 5500 M20 Memory

RDIMM Slot 1	Std. RDIMM
RDIMM Slot 2	
RDIMM Slot 3	
RDIMM Slot 4	
RDIMM Slot 5	
RDIMM Slot 6	
RDIMM Slot 7	
RDIMM Slot 8	

Part Number	Memory Description
01K7262	Netfinity 128 MB SDRAM ECC RDIMM <sup>1</sup>
01K8043	Netfinity 256 MB SDRAM ECC RDIMM <sup>1</sup>
01K7263	Netfinity 512 MB SDRAM ECC RDIMM <sup>1</sup>

1. DIMMs should be installed in the following sequence beginning with Slot 1 and ordered from largest to smallest: 1-5-2-6-3-7-4-8.

Total Memory <sup>1</sup>	All Models
256 MB	256 MB RDIMM Standard
384 MB	1 x 01K7262
512 MB	1 x 01K8043
768 MB	1 x 01K7263 or 2 x 01K8043 <sup>3</sup>
1280 MB	2 x 01K7263 or 4 x 01K8043 <sup>3</sup>
1792 MB	3 x 01K7263 or 6 x 01K8043 <sup>3</sup>
2048 MB	(3 x 01K7263, 1 x 01K8043) or 7 x 01K8043 <sup>3</sup>
3072 MB	5 x 01K7263, 1 x 01K8043
4096 MB	8 x 01K7263 <sup>2</sup>

This table does not represent all possible memory configurations.

1. Network Operating Systems may limit the maximum amount of addressable memory. See operating system specifications for further information.

2. Replace standard DIMM.

3. Memory modules may vary in price per MB. Selection of smaller RDIMMs may provide a more cost-effective alternative to using the largest RDIMMs and should be considered when anticipated future memory is 2 GB or less.

## Netfinity 5500 M20 Hard Disk Drive (HDD) Storage

Total Internal Storage <sup>1</sup>	7200 RPM Hard Disk Drives (HDDs)			10,000 RPM Hard Disk Drives (HDDs)		
	9.1 GB	18.2 GB	36.4 GB	9.1 GB	18.2 GB	36.4 GB
0 GB	Standard on Base Models			Standard on Base Models		
91 GB	1 x 01K8053	-	-	1 x 36L9806	-	-
18.2 GB	2 x 01K8053 or	1 x 02K0440		2 x 36L9806 or	1 x 36L9807	-
272 GB	3 x 01K8053	-	-	3 x 36L9806	-	-
36.4 GB	4 x 01K8053 or	2 x 02K0440 or	1 X 02K0441	4 x 36L9806 or	2 x 36L9807 or	1 x 36L9808
45.5 GB	5 x 01K8053	-	-	5 x 36L9806	-	-
54.6 GB	6 x 01K8053 or	3 x 02K0440	-	6 x 36L9806 or	3 x 36L9807	-
72.8 GB	-	4 x 02K0440 or	2 X 02K0441	-	4 x 36L9807 or	2 x 36L9808
91 GB	-	5 x 02K0440	-	-	5 x 36L9807	-
109 GB(max)	-	6 x 02K0440 or	3 X 02K0441	-	6 x 36L9807 or	3 x 36L9808

This table does not represent all possible hard drive configurations.

1. Total Internal Storage listed is within  $\pm$  0.2 GB unless otherwise noted.

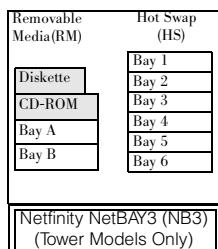


Bay	Form Factor	Height	Front Access	Usage	Part Number	Description	RPM	Height	Bays Supported	Max. Qty.
-	3.5"	SL	Yes	Diskette	<b>Internal Hard Disk Drives (HDD)</b>					
-	5.25"	HH	Yes	IDE CD-ROM	01K8053	Netfinity 91 GB Wide Ultra SCSI SCA-2 SL HDD	7200	SL	1..6	6
A	5.25"	HH <sup>1</sup>	Yes	Open	02K0440	Netfinity 18.2 GB Wide Ultra SCSI Hot-Swap SL HDD	7200	SL	1..6	6
B	5.25"	HH <sup>1</sup>	Yes	Open	02K0441	Netfinity 36.4 GB Wide Ultra SCSI Hot-Swap HDD	7200	HH <sup>1</sup>	1/2, 3/4, 5/6	3
1..6	HS	SL <sup>2</sup>	Yes	Open	36L9806	Netfinity 91 GB 10K-3 Wide Ultra SCSI Hot-Swap SL HDD	10,000	SL	1..6	6
NB3 <sup>3</sup>	19" Rack	3U	Yes	Open	36L9807	Netfinity 18.2 GB 10K-3 Wide Ultra SCSI Hot-Swap SL HDD	10,000	SL	1..6	6

1. Two half-high (HH) bays can be combined to support a single full-high (FH) device.

2. Two slim-line (SL) bays can be combined to support a single half-high (HH) device.

3. One NetBAY3 is included with tower models and a total of three are supported. See IBM Netfinity NetBAY3 Stackable Enclosure section for supported devices.



<b>External Storage Expansion Units<sup>2</sup></b>						Form Factor
35202RU	Netfinity EXP15 Storage Expansion Unit					Rack (3U)
35301RU	Netfinity EXP200 Storage Expansion Unit					Rack (3U)
37L5857	Netfinity EXP200 Rack-to-Tower Conversion Kit					Tower

1. Two slim-line (SL) bays can be combined to support a single half-high (HH) device.

2. Supported by the onboard external SCSI port. Select the onboard or optional SCSI controller then refer to Appendix D: Cables-Storage Units-Controllers to confirm the controller supports the desired External Storage Expansion Unit and to select a supported cable. For HDD or other expansion unit options, see the specific expansion unit section.

### Internal SCSI Cabling

Netfinity 5500 M20 systems contain a backplane supporting six hot-swap drive bays. The backplane is connected to one of the two connectors of the integrated dual-channel ServeRAID controller through a 16-bit SCSI cable. A two-drop 16-bit SCSI cable, with an integrated terminator, is included with the server to support up to two internal removable media devices connected to the second RAID connector or a supported SCSI adapter. The standard cabling routes the second RAID connector to the rear panel cutout providing an external 16-bit VHDCI 0.8 mm connector. If internal removable media devices are required, in addition to external RAID device attachment, a supported SCSI adapter must be installed using the standard two-drop SCSI cable for device/adapter connection. If connecting narrow devices to this cable, additional 68-pin to 50-pin converters (P/N 32G3925) must be ordered. Some narrow devices include a converter in their ship group.





## Netfinity 5500 M20 I/O Options

Part Number	Description	Adapter Length	PCI Support	Slots Supported <sup>1</sup>	Hot-Plug <sup>2</sup>
<b>Storage Controllers<sup>3</sup></b>					
01K7364	Netfinity ServeRAID-3L Ultra2 SCSI Adapter <sup>4, 5</sup>	Full	32-bit	1..4	X
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter <sup>6</sup>	Full	32/64-bit	1..4	X
02K3454	PCI Fast/Wide Ultra SCSI Adapter	Half	32-bit	1..5	-
01K7297	Netfinity Fibre Channel PCI Adapter <sup>7</sup>	Half	32/64-bit	1..5	-
09L2123	Advanced SerialRAID/X Adapter	Full	32-bit	1..4	-
<b>Networking<sup>8</sup></b>					
<b>Ethernet</b>					
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2	Half	32-bit	1..5	X
08L3341	Netfinity 10/100 Fault Tolerant Adapter	Half	32-bit	1..5	X
34L0301	Netfinity Gigabit Ethernet SX Adapter	Half	32/64-bit	1..5	X
<b>Token Ring</b>					
34L0501	Token-Ring 100/16/4 High-Speed PCI Adapter	Half	32-bit	1..5	-
34L0601	Token-Ring 16/4 PCI Adapter 2	Half	32-bit	1..5	-
<b>Communications</b>					
33L4618	PCI V90 56 Data/Fax Modem <sup>9</sup>	Half	32-bit	1..5	-
37L1414	Serial I/O SST8P DB Adapter <sup>10</sup>	Half	32-bit	1..6 <sup>10</sup>	-
37L1415	Serial I/O sst16P RJ Adapter	Half	32-bit	1..6 <sup>10</sup>	-
37L1423	Serial I/O SST16P DB Adapter	Half	32-bit	1..6 <sup>10</sup>	-
37L1416	Serial I/O sst128P Expandable Adapter	Half	32-bit	1..6 <sup>10</sup>	-
<b>Systems Management<sup>11</sup></b>					
01K7209	Netfinity Advanced System Management PCI Adapter <sup>12</sup>	Full	32-bit	1..4 <sup>13</sup>	-
03K9309	Netfinity Advanced System Management Interconnect Cable Kit <sup>14</sup>	-	-	-	-
36L9654	Netfinity Advanced System Management Token-Ring Connection <sup>15</sup>	-	-	-	-
<b>Host Attach</b>					
9086001	Netfinity ESCON Adapter <sup>16</sup>	Full	32-bit	1..6 <sup>17</sup>	-

1. PCI Slots 1, 2, 3 and 4 support Hot Plug devices.

2. Hot Plug capable using IBM's Active PCI technology. For Network Operating System support access URL [www.ibm.com/pc/us/compat](http://www.ibm.com/pc/us/compat).

3. Netfinity 5500 and 5500 Mxx have a dual channel ServeRAID II Wide Ultra SCSI controller.

4. All ServeRAID-3x adapters can be upgraded with the same enhanced software utilities and firmware included with ServeRAID-3HB. The download is available for no charge from [www.ibm.com/pc/support](http://www.ibm.com/pc/support). Select "Server" in Brand pulldown, "ServeRAID" in the Family pulldown and then "Downloadable files". The upgrade should be considered for installations with firmware less than Version 3.5.

5. Netfinity ServeRAID-3L Ultra2 SCSI Adapter (P/N 01K7364) provides either one internal or one external (0.8 mm VHDCI) LVDS SCSI channel.

6. Netfinity ServeRAID-3HB Ultra2 SCSI Adapter (P/N 37L6086) provides one internal and two external (0.8 mm VHDCI) LVDS SCSI channels.

The internal channel can be configured for external usage (0.8mm VHDCI connector) providing a total of three external LVDS SCSI channels. Includes 32MB of mirrored battery-backup cache, which helps protect against data loss in write-back cache mode in the event of a power outage or adapter maintenance.

7. See Netfinity Fibre Channel Solutions section for additional configuration information.

8. Netfinity 5500 and 5500 Mxx have an integrated 10/100 PCI Ethernet Controller.

9. Due to homologation variances, modem availability may differ by country.

10. See Appendix E for details on Serial I/O options and configuration limitations. A maximum of four Serial I/O adapters (any combination of P/N 37L1414, 37L1415, 37L1416, 37L1423) may be installed.

11. The Netfinity Advanced System Management Processor and Interconnect Bus integrated into Netfinity 5500 (8660-5..6xU) and 5500 Mxx works with Netfinity Manager to provide significant system management function. When used with optional Netfinity Advanced System Management PCI Adapter (P/N 01K7209) and Netfinity Advanced System Management Interconnect Cable Kit (P/N 03K9309) additional management and control of up to 12 service processors from a remote console through a single modem or LAN connection is possible. Systems management options P/N 01K7209, 03K9309 and 36L9654 are NOT supported by Netfinity 5500 models 8660-1..4xU.

12. Includes PCI adapter, Netfinity Advanced System Management Interconnect Cable Kit components and 56-watt AC adapter, which requires a separate power source. Provides an integrated 10/100 Ethernet port and a PCMCIA slot to support optional Netfinity Advanced System Management Token-Ring Connection (P/N 36L9654). NOT supported by Netfinity models 8660-1..4xU.

13. A maximum quantity of one is supported.

14. Required for all Netfinity servers containing a standard Advanced System Management Processor that are to be interconnected for system management support through a LAN or modem connection (Netfinity 5500 models 8660- 1..4xU are not supported). Optional Netfinity Advanced System Management PCI Adapter (P/N 01K7209) includes the content of this option. Up to 12 service processors may be interconnected (including standard and optional processors) with an aggregate connection length of no more than 914 meters (300 ft.). A customer-supplied Ethernet cable is required for each interconnection.

15. Contains an IBM Turbo 16/4 Token-Ring PCI Card, which installs in the PCMCIA card slot of Netfinity Advanced System Management PCI Adapter (P/N 01K7209), and a PC Card to 9-pin D-Shell cable which is routed to a rear chassis cut-out. The Netfinity Advanced System Management PCI Adapter's integrated Ethernet port and Netfinity Advanced System Management Token-Ring Connection cannot be connected or used together.

16. Provides an ESCON MIC and a DB9 Serial Port. Cables are not included but are available through S390 channels. Contact your IBM representative for additional information.

17. A maximum of two 9086001 adapters (installed in non-adjacent slots) are supported in a single Netfinity server.

ISA - Full Length
Slot 1 - PCI, Hot-Plug, 32-bit, Full Length
Slot 2 - PCI, Hot-Plug, 32-bit, Full Length
Slot 3 - PCI, Hot-Plug, 32-bit, Full Length
Slot 4 - PCI, Hot-Plug, 32-bit, Full Length
Slot 5 - PCI, Primary Bus, Half Length



## Netfinity 5500 M20 Power, Monitor & Accessories

Part Number	Description
<b>Power<sup>1</sup></b>	
01K7953	Netfinity 500 W Hot-Swap Redundant Power Supply <sup>2</sup>
<b>Uninterruptible Power Supply (UPS)<sup>3</sup></b>	
94G3136	APC Smart-UPS 1400 (20 min. runtime at 450 Watts)
94G6674	APC Smart-UPS 1400RMB (15 min. runtime at 450 Watts) <sup>4</sup>
94G6676	APC Smart-UPS 3000RMB (45 min. runtime at 450 Watts) <sup>4</sup>
<b>Monitors</b>	
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black <sup>5</sup>
65474AN	G74 Color Monitor 17" (15.9 Viewable Image Size), stealth black <sup>5</sup>
65494AN	G96 Color Monitor 19" (17.9" Viewable Image Size), stealth black <sup>6</sup>
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black <sup>7</sup>
<b>Cables<sup>8</sup></b>	
32G3925	SCSI 68-pin to 50-pin Converter

1. Netfinity 5500 M20 includes a single 500W power supply which is sufficient to operate fully configured systems. If power supply redundancy is desired, optional power supply P/N 01K7953 is required.

2. Includes a power cord which requires an additional power source. Even though a second UPS provides a redundant power source, systems management software does not currently take advantage of its power outage alerts.

3. Stated runtimes and power are for typical configurations (approximately 70% of maximum capacity).

For additional information see Appendix C: UPS Runtime Estimate.

4. Height is 3U. See "Rack and NetBAY" for supported IBM racks.

5. Installation within a rack requires optional Monitor Compartment (P/N 94G7444).

6. Not supported for installation in a 19" rack.

7. Installation within a rack requires optional Netfinity Flat Panel Monitor Rack Mount Kit (P/N 37L6857) and Netfinity Rack Keyboard Tray (P/N 28L4707). A space saver keyboard may coexist within the same 28L4707 keyboard tray.

8. Netfinity 5500 M20 comes with an external 0.8 mm VHDCI port cabled to the second onboard RAID SCSI port.

Part Number	Description
<b>Conversion Kits</b>	
01K8021	Netfinity 5500 Rack-to-Tower Kit <sup>1</sup>
01K8020	Netfinity 5500 Tower-to-Rack Kit
<b>Rack and NetBAY<sup>2</sup></b>	
930842P	Netfinity Enterprise Rack
930842X	Netfinity Enterprise Expansion Cabinet
9306900	Netfinity Rack
9306200	Netfinity NetBAY22
10L6912	Netfinity NetBAY3 <sup>3</sup>
10L6913	Netfinity Caster Set
<b>Keyboard and Mouse<sup>4</sup></b>	
28L3644	Space Saver II Keyboard <sup>5, 7</sup>
01K1260	TrackPoint IV 104-Key Black Keyboard <sup>6, 7</sup>
28L3621	Preferred Keyboard (stealth black) <sup>6</sup>
28L3673	Sleek 2-Button Stealth Black Mouse

1. Includes one Netfinity NetBAY3 with skid pads. Optional casters (P/N 10L6913) are available.

2. Netfinity 5500 and 5500 Mxx rack models are housed in a 19" rack mountable drawer and require one of the racks listed here. Tower models include a single NetBAY3 with skid pads. Optional casters (P/N 10L6913) are available. See IBM Netfinity Rack Cabinet and Options section for IBM rack NetBAY3 with skid pads. Optional casters (P/N 10L6913) are available. See IBM Netfinity Rack supported devices.

3. A maximum of three NetBAY3 enclosures (including the standard one) may be stacked beneath a supported Netfinity tower server. Casters are not included. See IBM Netfinity NetBAY3 Stackable Enclosure section for supported devices.

4. Tower models include both a mouse and a keyboard. Rack models include neither.

5. Installation within a rack requires optional keyboard tray P/N 28L4707 (stows in "ready-to-use" position).

6. Installation within a rack requires optional keyboard tray P/N 28L4707. This keyboard cannot share a keyboard tray with a flat panel display.

7. Advanced TrackPoint IV features are not available on IBM Netfinity systems.



### Netfinity 5500 M20 Tape Options

Part Number	Description	Bays Supported	SCSI Interface (bit)	Form Factor	Termination Included	68/50-pin Converter Incl.	Ext. Tape Encl. <sup>1</sup>
01K1282	12/24 GB DDS/3 4-mm Internal Tape Drive	A, B	8	3.5" HH or 5.25" HH	Y <sup>2</sup>	Y	3510020
01K1325	20/40 GB 8-mm Internal SCSI Tape Drive	A, B	16	5.25" HH	N <sup>3</sup>	N	3510020 <sup>4</sup> , 3551001
01K1320	20/40 GB DLT Internal SCSI Tape Drive	A/B <sup>5</sup>	8	5.25" FH	Y <sup>2</sup>	Y	3503B0X, 3551001
04K0149	35/70 GB DLT Internal SCSI Tape Drive	A/B <sup>5</sup>	16	5.25" FH	N <sup>3</sup>	N	3503B0X <sup>4</sup> , 3551001
00N7990	40/80 GB DLT Internal SCSI Tape Drive	A/B <sup>5</sup>	16 LVD	5.25" FH	N <sup>3</sup>	N	3503B0X <sup>4</sup> , 3551001
<b>Associated Options</b>							
32G3918	SCSI-2 16-bit Active Terminator	-	16	External	Y	N	3510020, 3503B0X
<b>External Tape Enclosures</b>							
3510020	External Half High SCSI Storage Enclosure <sup>6</sup>	-	8/16	Desktop	N	N	-
3551001	NetMEDIA Storage Expansion Unit EL <sup>7</sup>	-	16	Rack	Y	N	-
10L7113	NetMEDIA Systems Management Adapter <sup>8</sup>	-	16	-	N	N	3551001
3503B0X	DLT External SCSI Enclosure <sup>9</sup>	-	16	Desktop	N	N	-
<b>External Tape Libraries<sup>10</sup></b>							
3502108	DLT Tape Autoloader	-	16	Desktop	Y	-	-
3502x14	DLT Tape Library	-	16	Desktop or Rack	Y	-	-
3503108	DLT8000 Tape Autoloader	-	16 LVD	Desktop	Y	-	-
3503x14	DLT8000 Tape Library	-	16 LVD	Desktop or Rack	Y	-	-
3570xxx	Magstar MP 3570 Tape Subsystem (models B2x and C2x)	-	Diff.	Rack	Y	-	-

1. To determine cable requirements, note the tape drive's SCSI interface, the appropriate SCSI controller from the system configurator section, and the desired enclosure and then refer to Appendix D: Cables - Storage Units - Controllers.

2. Tape drive is capable of self termination.

3. Termination is provided by the system unit's standard SCSI cabling.

4. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).

5. Two Half-High (HH) bays can be combined to support a single Full-High (FH) device.

6. Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either tape drive self termination or SCSI-2 16-bit Active Terminator (P/N 32G3918).

7. Provides a black 3U, 19" rack or NetBAY3 mountable tape enclosure. Provides two full high (FH) or four half high (HH) extended length 5.25" bays. External connector is 0.8-mm VHDCI. Includes two power supplies and two power cords.

8. Installs in a 3551001. Provides repeater function and LVDS interface allowing longer cable lengths and auto-termination when the 3551001 is powered off.

9. Provides a black desktop DLT tape enclosure with a 68-pin high density external connector. Requires termination by the tape drive or by installation of a SCSI-2 16-bit Active Terminator (P/N 32G3918).

10. Tape library attributes and prerequisites are located in Appendix B: Tape Library Attributes.

NOTE: SCSI support for tape drives is provided by system unit onboard (standard) controller (no-RAID function) or PCI Fast Wide Ultra SCSI Adapter P/N 02K3454. Additional tape attributes can be found in Appendix A: Tape Drive Attributes.



## Sample Configurations

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

### High Availability

Part Number	Description	Quantity	Usage
8662-31Y	Netfinity 5500 M20 (Pentium III Xeon 500/512 KB 256 MB Tower & NetBAY3)	1	-
01K8053	Netfinity 91 GB Wide Ultra SCSI SCA-2 SL HDD	2	NOS on mirrored HDD's
36L9806	Netfinity 91 GB 10K-3 Wide Ultra SCSI Hot-Swap SL HDD	4	RAID 5 with Hot-Spare
01K1320	20/40 GB DLT Internal SCSI Tape Drive	1	-
7852400	External V34 Data/Fax Modem	1	Remote Management
01K7953	Netfinity 500W Hot-Swap Redundant Power Supply	1	-
10L6912	Netfinity NetBAY3	1	Enclosure for second UPS
94G6674	APC Smart-UPS 1400RMB <sup>1</sup>	2	Redundant UPS's
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	-

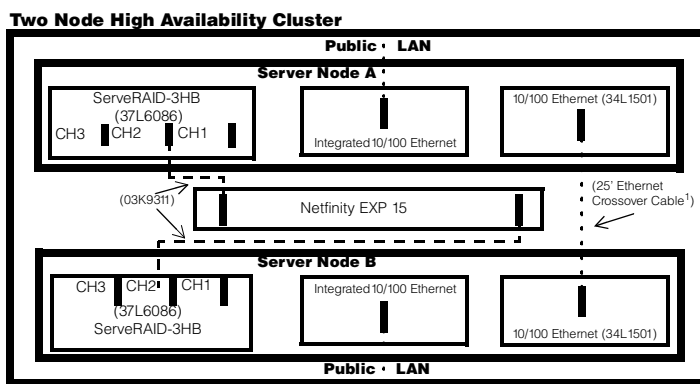
1. Even though a second UPS provides a redundant power source, systems management software does not currently take advantage of its power outage alerts.

This tower server is configured to act as the foundation for business critical applications, applications your business cannot afford to be without. Configured with enough disk drives to mirror the operating system and provide a standard RAID 5 environment for data, optional hot-swap redundant power and redundant UPSs for power even during a blackout or in the event of a UPS or power cord failure, this server represents the leading edge in high availability. An internal tape drive is included to back-up that all important asset..... data, and a modem is included to allow out-of-band (non-LAN) system management utilizing the Netfinity Advanced System Management Processor.

### Consolidation Server

Part Number	Description	Quantity	Usage
8662-61Y	Netfinity 5500 M20 (Pentium III Xeon 550/1 MB 256 MB Tower & NetBAY3)	1	-
33L5108	Netfinity 550 MHz/1 MB Upgrade with Pentium III Xeon Processor	3	-
01K7263	512 MB SDRAM ECC RDIMM	3	Total Memory: 2GB
01K8043	256 MB SDRAM ECC RDIMM	1	Total Memory: 2GB
02K0440	Netfinity 18.2 GB Wide Ultra SCSI Hot-Swap SL HDD	6	> 100GB Internal Storage
00N7990	40/80 GB DLT Internal SCSI Tape Drive	1	-
01K7953	Netfinity 500W Hot-Swap Redundant Power Supply	1	-
94G6676	APC Smart-UPS 3000RMB	1	Installed in NetBAY3
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	-

This tower model is configured to meet the need of server consolidation. Many businesses are trying to get their arms around the dispersed departmental servers that have grown-up around the enterprise. By moving multiple servers onto one platform there is only one system to manage, both hardware and software. There is potentially less expensive for service, software licenses, etc., and there is no need to worry about putting all your eggs in one basket because the Netfinity 5500 M20 is designed for high availability. This configuration can accommodate over 100 GB of data storage, features a second power supply which provides fully redundant power, a UPS to insure the system continues to run even if there is a momentary electricity loss, and an internal tape drive that backs up to 70 GB per tape...in addition to all the standard features of the Netfinity 5500 M20.



1. Customer supplied Ethernet Crossover Cable may vary in length up to a maximum of 25' (76 m).

### Two Node High Availability Cluster

Part Number	Description	Quantity	Usage
<b>Server Nodes A &amp; B</b>			
8662-6RY	Netfinity 5500 M20 (Pentium III Xeon 550/1 MB 256 MB Rack)	2	-
33L5108	Netfinity 550 MHz/1 MB Upgrade with Pentium III Xeon Processor	2	Dual SMP Processing
01K7262	Netfinity 128 MB SDRAM ECC RDIMM	2	Total Memory: 384 MB (each)
01K8053	Netfinity 91 GB Wide Ultra SCSI SCA-2 SL HDD	4	NOS on mirrored HDDs
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter <sup>2</sup>	2	Three channels for EXP15s
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2 <sup>1</sup>	2	Private Interconnect
00N7990	40/80 GB DLT Internal SCSI Tape Drive		
02K3454	PCI Fast/Wide Ultra SCSI Adapter	1	Tape Drive Controller
7852400	External V34 Data/Fax Modem	2	Remote Management
01K7953	Netfinity 500W Hot-Swap Redundant Power Supply	2	-
94G6676	APC Smart-UPS 3000RMB (3U)	2	-
<b>Storage Expansion Unit</b>			
35202RU	Netfinity EXP15 <sup>2</sup> (3U)	1	-
01K7959	Netfinity EXP10 91 GB Wide Ultra SCSI SCA-2 HDD <sup>2</sup>	5	RAID 5 Shared Storage
03K9311	Netfinity 4.2M Ultra2 SCSI Cable <sup>2</sup>	2	Attach EXP15 to Servers
<b>Shared (or single occurrence) Resources</b>			
9513AG1	T55 Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black	1	Mounts in keyboard tray
28L3644	Space Saver II Keyboard	1	Mounts in keyboard tray
<b>Industry Standard 19" Rack, EIA-310D, Min. depth of 28"</b>			
9306900	9306-900 Netfinity Rack	1	-
28L4707	Netfinity Rack Keyboard Tray	1	-
37L6857	Netfinity Flat Panel Monitor Rack-Mount Kit (3U)	1	Mounts in keyboard tray
28L0542	Netfinity Console Server Selector Switch (4-port)	1	-
94G6667	Power Cable-Type A14 <sup>3</sup>	3	-
94G7447	12ft. Console Cable Set	2	-
94G6669	Side Panel Kit	1	-
94G6670	Blank Filler Kit	2	-

1. Requires customer supplied Ethernet Crossover Cable which may vary in length up to a maximum of 25' (76 m).

2. By replicating these items, up to a total quantity of four ServeRAID-3HB Adapters (plus options) and eleven EXP15s can provide over 2 Terabytes of storage. Additional power and rack space will be required.

3. Cable length requirements are dependent on component placement within the rack or rack suite. To determine specific configuration requirements use the Netfinity Rack Configurator which is downloadable from the Web site [www.ibm.com/pc/us/netfinity/tech\\_library.html](http://www.ibm.com/pc/us/netfinity/tech_library.html) "Configuration Tools".

Clustering is a group of interconnected computers used as a single, unified computing resource. Clustering Netfinity servers, like the IBM Netfinity 5500 M20, provides a high availability solution to keep you in touch with the key applications you need to run your business.

This sample configuration consists of paired IBM Netfinity 5500 M20 cluster nodes equipped with two of the possible four SMP processors and redundant power supplies. Microsoft Cluster Service (MSCS) has been validated on IBM Netfinity 5500 M20 servers, using the Netfinity ServeRAID-3HB with the EXP15 Storage Expansion Unit. MSCS allows two configured servers, referred to as nodes, to be connected together to form a cluster. Providing system redundancy means that a complete server can fail and client access to server resources is largely unaffected. MSCS extends this theme by also allowing for software failures at an application level as well as an operating system level. If the operating system fails, all applications and services can be restarted on another server, and if just one application fails, it can be managed by MSCS individually. An additional independent network connection is used to perform monitoring within the cluster. One or more disk subsystems are attached to both nodes. In the above example, a Netfinity EXP15 was selected and the IBM ServeRAID-3HB Ultra2 SCSI Adapters provide the I/O control. Netfinity ServeRAID-3HB handles the "SCSI heartbeat" connection without the need for a dedicated SCSI connection and logically attaches the quorum disk, which allows arbitration when a failure occurs. Additional information on IBM Netfinity and IBM PC Server Clustering Solutions may be found on the World Wide Web by accessing URL [www.ibm.com/pc/us/netfinity/clustering.html](http://www.ibm.com/pc/us/netfinity/clustering.html).



# IBM Netfinity 5600 Configurator

Part Number	Processor Speed (MHz) <sup>2</sup>	Number of Processors (Std./Max)	L2 ECC Cache (KB)	Memory (Std./Max) (R = RDIMM)	Form Factor	Power Supply Quantity (Std./Max)	Hot-Swap (Power, Slots, HDD, Fans)	Redundancy (Optional, Standard)	Adv. System Management Processor	Onboard Ethernet (Mbps)	SCSI Controller (Dual, Ultra, RAID, LVD)	Removable Media Bays (Total/Avail)	Internal Hard Disk Drive (Std./Max)	CD-ROM (IDE)	Bays: (Total/Avail)	Slots: (Total/Avail)
8664-11Y	533EB	1/2	256	128 MB(R)/4 GB <sup>3</sup>	Tower	2/3	P, S, H, F	S-Power <sup>4</sup> S-Fans	Y	10/100	D, U2, L	4/2	0/109 GB	40X- 17X <sup>5</sup>	10/8	5/5
8664-1RY <sup>1</sup>	533EB	1/2	256	128 MB(R)/4 GB <sup>3</sup>	Rack(5U)	2/3	P, S, H, F	S-Power <sup>4</sup> S-Fans	Y	10/100	D, U2, L	4/2	0/109 GB	40X- 17X <sup>5</sup>	10/8	5/5
8664-21Y	600EB	1/2	256	128 MB(R)/4 GB <sup>3</sup>	Tower	2/3	P, S, H, F	S-Power <sup>4</sup> S-Fans	Y	10/100	D, U2, L	4/2	0/109 GB	40X- 17X <sup>5</sup>	10/8	5/5
8664-2RY <sup>1</sup>	600EB	1/2	256	128 MB(R)/4 GB <sup>3</sup>	Rack(5U)	2/3	P, S, H, F	S-Power <sup>4</sup> S-Fans	Y	10/100	D, U2, L	4/2	0/109 GB	40X- 17X <sup>5</sup>	10/8	5/5
8664-31Y	667	1/2	256	256 MB(R)/4 GB <sup>3</sup>	Tower	2/3	P, S, H, F	S-Power <sup>4</sup> S-Fans	Y	10/100	D, U2, L	4/2	0/109 GB	40X- 17X <sup>5</sup>	10/8	5/5
8664-3RY	667	1/2	256	256 MB(R)/4 GB <sup>3</sup>	Rack(5U)	2/3	P, S, H, F	S-Power <sup>4</sup> S-Fans	Y	10/100	D, U2, L	4/2	0/109 GB	40X- 17X <sup>5</sup>	10/8	5/5

1. Housed in a 19" Rack mountable drawer and ships standard without a keyboard or mouse. See "Rack and NetBAY" under "Netfinity 5600 Power, Monitor & Accessories" for supported IBM racks.

2. Intel Pentium III processor with 133 Mhz front-side bus (FSB). Intel uses EB to designate the attributes of the 533 MHz and 600 MHz processors. E stands for advanced transfer (full-speed) cache and B stands for 133 MHz front-side bus.

3. High-speed, 133 MHz SDRAM.

4. Robust configurations may require optional Netfinity 250W Hot-Swap Redundant Power Supply (P/N 33L3760) for redundancy. See "Power" under "Netfinity 5600 Power, Monitor & Accessories" for additional information.

## Netfinity 5600 Processor Upgrades

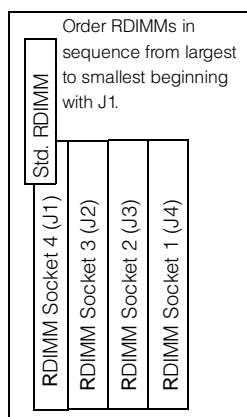
Part Number	Processor Upgrades with 512 KB Cache	SMP Support <sup>1</sup>	Processor Speed Upgrade <sup>2</sup>
10K2168	Netfinity 533EB MHz 133 FSB/256 KB Upgrade with Pentium III Processor	1xY	-
00N7948	Netfinity 600EB MHz/133 FSB/256 KB Upgrade with Pentium III Processor	2xY	All 1xY
00N7949	Netfinity 667 MHz 133 FSB/256 KB Upgrade with Pentium III Processor	3xY	All 1...2xY

1. One additional processor may be installed, providing a maximum of two. All processors must be identical in type, speed, and cache size.

2. Requires removal of the standard processor. A maximum of two processors may be installed. All processors must be identical in type, speed and cache size. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access [www.ibm.com/pc/support](http://www.ibm.com/pc/support) and enter machine "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".



## Netfinity 5600 Memory



Total Memory <sup>1</sup>	Quantity of RDIMMs Added			
128 MB (1 x 128) Models	128 MB (33L3058)	256 MB (33L3060)	512 MB (33L3062)	1 GB (33L3062) <sup>3</sup>
256 MB	1	-	-	-
384 MB	2 or	1	-	-
512 MB	3	-	-	-
640 MB	-	2 or	1	-
896 MB	-	3	-	-
1024 MB	-	4 <sup>2</sup>	-	-
1152 MB	-	-	2 or	1
1664 MB	-	-	3	-
2048 MB	-	-	4 <sup>2</sup>	-
2176MB	-	-	-	2
3200 MB	-	-	-	3
4096 MB (max)	-	-	-	4 <sup>2</sup>

This table does not represent all possible memory configurations.

1. Network Operating Systems may limit the maximum amount of addressable memory. See operating system specifications for further information.

2. Requires removal of standard memory.

3. Planned availability of 4Q 1999.

Part Number	Memory Description <sup>1</sup>
33L3058	Netfinity 128 MB, 133 MHz SDRAM ECC RDIMM
33L3060	Netfinity 256 MB, 133 MHz SDRAM ECC RDIMM
33L3062	Netfinity 512 MB, 133 MHz SDRAM ECC RDIMM
33L3064	Netfinity 1 GB, 133 MHz SDRAM ECC RDIMM <sup>2</sup>

1. Order RDIMMs in sequence from largest to smallest beginning with socket 4 (J1).

2. Planned availability of 4Q 1999

## Netfinity 5600 Hard Disk Drive (HDD) Storage

Total Int. Storage <sup>1</sup>	7200RPM Hard Disk Drives (HDDs)			10,000RPM Hard Disk Drives (HDDs)		
	9.1 GB	18.2 GB	36.4 GB	9.1 GB	18.2 GB	36.4 GB
0 GB	Standard on Base Models			Standard on Base Models		
9.1 GB	1 x 36L9744	-	-	1 x 36L9748	-	-
18.2 GB	2 x 36L9744 or	1 x 36L9745	-	2 x 36L9748 or	1 x 36L9749	-
273 GB	3 x 36L9744	-	-	3 x 36L9748	-	-
36.4 GB	4 x 36L9744 or	2 x 36L9745 or	1 x 36L9746	4 x 36L9748 or	2 x 36L9749 or	1 x 36L9750
45.5 GB	5 x 36L9744	-	-	5 x 36L9748	-	-
54.6 GB	6 x 36L9744 or	3 x 36L9745	-	6 x 36L9748 or	3 x 36L9749	-
72.8 GB	-	4 x 36L9745 or	2 x 36L9746	-	4 x 36L9749 or	2 x 36L9750
91 GB	-	5 x 36L9745	-	-	5 x 36L9749	-
109.2 GB (max)	-	6 x 36L9745 or	3 x 36L9746	-	6 x 36L9749 or	3 x 36L9750

This table does not represent all possible hard drive configurations.

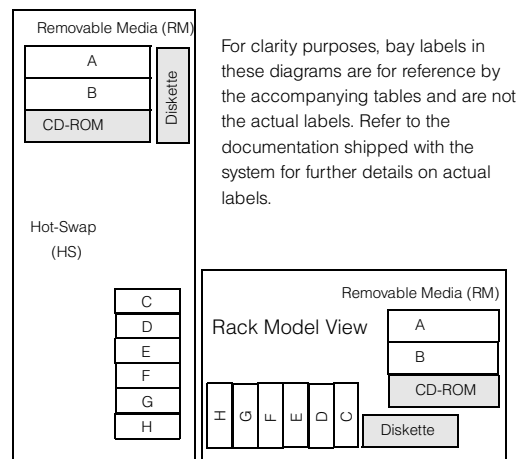
1. Total Internal Storage listed is within ± 0.2 GB unless otherwise noted.



Bay	Form Factor	Height	Front Access	Usage	Part Number	Description	RPM	Height	Bays Supported	Max. Qty.
A	5.25"	HH <sup>1</sup>	Yes	Open	<b>Internal Hard Disk Drives (HDD)</b>					
B	5.25"	HH <sup>1</sup>	Yes	Open	36L9744	Netfinity 91 GB Wide Ultra2 SCSI Hot-Swap SL HDD	7200	SL	C...H	6
-	5.25"	HH	Yes	IDE CD-ROM	36L9745	Netfinity 18.2 GB Wide Ultra2 SCSI Hot-Swap SL HDD	7200	SL	C...H	6
-	3.5"	SL	Yes	Diskette	36L9746	Netfinity 36.4 GB Wide Ultra2 SCSI Hot-Swap HDD	7200	HH <sup>1</sup>	C/D, E/F, G/H	3
C...H	HS	SL <sup>2</sup>	Yes	Open	36L9748	Netfinity 91 GB 10K-3 Wide Ultra2 SCSI Hot-Swap SL HDD	10,000	SL	C...H	6
					36L9749	Netfinity 18.2 GB 10K-3 Wide Ultra2 SCSI Hot-Swap SL HDD	10,000	SL	C...H	6
					36L9750	Netfinity 36.4 GB 10K-3 Wide Ultra2 SCSI Hot-Swap HDD	10,000	HH <sup>1</sup>	C/D, E/F, G/H	3
<b>External Storage Expansion Units<sup>2</sup></b>						<b>Form Factor</b>				
35202RU						Netfinity EXP15 Storage Expansion Unit	Rack (3U)			
35301RU						Netfinity EXP200 Storage Expansion Unit	Rack (3U)			
37L5857						Netfinity EXP200 Rack-to-Tower Conversion Kit	-			

1. Two half-high (HH) bays can be combined to support a single full-high (FH) device.  
 2. Two slim-line (SL) bays can be combined to support a single half-high (HH) device.

#### Tower Model View



1. Two slim-line (SL) bays can be combined to support a single half-high (HH) device.  
 2. Not supported by the onboard external SCSI port. Select an optional SCSI controller then refer to see Appendix D: Cables-Storage Units-Controllers to confirm the controller supports the desired External Storage Expansion Unit and to select a supported cable. For HDD or other expansion unit options, see the specific expansion unit section.

#### Internal SCSI Cabling

The Netfinity 5600 contains a backplane supporting six hot-swap drive bays. The backplane is connected to the integrated dual channel, wide Ultra2 SCSI controller connector through a 16-bit LVD SCSI cable. If internal RAID support is required, this cable can be used to connect to a supported RAID adapter rather than the integrated SCSI controller. A two-drop, 16-bit SCSI cable with integrated terminator is also included with the server to support up to two internal removable media devices. This cable can be attached to the integrated SCSI controller if a RAID adapter is used to support the internal hot-swap drive bays. It can also be used to attach to a supported SCSI adapter if the integrated Ultra2 SCSI controller is utilized for the hot-swap bays. The second channel is available through an industry-standard 0.8-mm very high density connector interface (VHDCI) located on the rear panel for external use.



## Netfinity 5600 I/O Options

Part Number	Description	Adapter Length	PCI Support	Slots Supported	Hot-Plug <sup>2</sup>
<b>Storage Controllers<sup>1</sup></b>					
01K7364	Netfinity ServeRAID-3L Ultra2 SCSI Adapter <sup>3, 4</sup>	Full	32-bit	1..5	X
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter <sup>5</sup>	Full	32/64-bit	1..5	X
02K3454	PCI Fast/Wide Ultra SCSI Adapter	Half	32-bit	1..5	-
01K7297	Netfinity Fibre Channel PCI Adapter <sup>6</sup>	Half	32/64-bit	1..5	-
09L2123	Advanced SerialRAID/X Adapter	Full	32-bit	1..5 <sup>7</sup>	-
<b>Networking<sup>8</sup></b>					
<b>Ethernet</b>					
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2	Half	32-bit	1..5	X
08L3341	Netfinity 10/100 Fault Tolerant Adapter	Half	32-bit	1..5	X
34L0301	Netfinity Gigabit Ethernet SX Adapter	Half	32/64-bit	1..5	X
<b>Token Ring</b>					
34L0501	Token-Ring 100/16/4 High-Speed PCI Adapter	Half	32-bit	1..5	-
34L0601	Token-Ring 16/4 PCI Adapter 2	Half	32-bit	1..5	X
<b>Communications<sup>9</sup></b>					
33L4618	PCI V90 56K Data/Fax Modem <sup>10</sup>	Half	32-bit	1..5	-
37L1414	Serial I/O SST8P DB Adapter <sup>11</sup>	Half	32-bit	1..5 <sup>11</sup>	-
37L1415	Serial I/O SST16P RJ Adapter <sup>11</sup>	Half	32-bit	1..5 <sup>11</sup>	-
37L1423	Serial I/O SST16P DB Adapter <sup>11</sup>	Half	32-bit	1..5 <sup>11</sup>	-
37L1416	Serial I/O SST128P Expandable Adapter <sup>11</sup>	Half	32-bit	1..5 <sup>11</sup>	-
<b>Systems Management<sup>12</sup></b>					
01K7209	Netfinity Advanced System Management PCI Adapter <sup>13</sup>	Full	32-bit	1..5 <sup>14</sup>	-
03K9309	Netfinity Advanced System Management Interconnect Cable Kit <sup>15</sup>	-	-	-	-
36L9654	Netfinity Advanced System Management Token-Ring Connection <sup>16</sup>	-	-	-	-
<b>Host Attach</b>					
9086001	Netfinity ESCON Adapter <sup>17</sup>	Full	32-bit	1..5 <sup>18</sup>	-

Rack Model

Slot 5- PCI, Hot-Plug, 32/64-bit, Full Length
Slot 4- PCI, Hot-Plug, 32/64-bit, Full Length
Slot 3- PCI, Hot-Plug, 32/64-bit, Full Length
Slot 2- PCI, 32-bit, Full Length
Slot 1- PCI, 32-bit, Full Length

- Netfinity 5600 has two integrated Wide Ultra2 SCSI channels. One is internal and the other is external with a 0.8-mm Very High Density Connection Interface (VHDCI).
- Three of the five PCI slots are 32/64-bit hot-plug capable using IBM's Active PCI technology. For Network Operating System support access URL [www.ibm.com/pc/us/compat](http://www.ibm.com/pc/us/compat).
- All ServeRAID-3x adapters can be upgraded with the same enhanced software utilities and firmware included with ServeRAID-3HB. The download is available for no charge from [www.ibm.com/pc/support](http://www.ibm.com/pc/support). Select "Server" in Brand pull-down, "ServeRAID" in Family pull-down and then "Downloadable files". The upgrade should be considered for installations with firmware less than Version 3.5.
- Netfinity ServeRAID-3L Ultra2 SCSI Adapter (P/N 01K7364) provides either one internal or one external (0.8-mm VHDCI) LVDS SCSI channel.
- Netfinity ServeRAID-3HB Ultra2 SCSI Adapter (P/N 37L6086) provides one internal and 2 external (0.8-mm VHDCI) LVDS SCSI channels. The internal channel can be configured for external usage (0.8-mm VHDCI connector) providing a total of 3 external LVDS SCSI channels. Includes 32MB of mirrored battery-backup cache which helps protect against data loss in write-back cache mode in the event of a power outage or adapter maintenance.
- See Netfinity Fibre Channel Solutions section for additional configuration information.
- A maximum quantity of four is supported.
- Netfinity 5600 has an integrated 10/100 PCI Ethernet Controller.
- Netfinity 5600 includes two USB ports, three high-speed serial/asynchronous ports, (two NS16550A compatible, one for the Advanced System Management Processor), and one high-speed (up to 2 MB/sec. data transfer speed) bi-directional parallel port supporting devices using ECP/EPP/SSP protocols adhering to the IEEE 1284 standard.
- Due to homologation variances, modem availability may differ by country.
- See Appendix E for details on Serial I/O options and configuration limitations. A maximum of four Serial I/O adapters (any combination of P/N 37L1414, 37L1415, 37L1416, 37L1423) may be installed.
- The Netfinity Advanced Systems Management Processor and Interconnect Bus integrated into Netfinity 5600 works with Netfinity Manager to provide significant system management function. When used with optional Netfinity Advanced System Management PCI Adapter (P/N 01K7209) and Netfinity Advanced System Management Interconnect Cable Kit (P/N 03K9309) additional management and control of up to 12 service processors from a remote console through a single modem or LAN connection is possible.
- Includes PCI adapter, Netfinity Advanced System Management Interconnect Cable Kit components and 56-watt AC adapter which requires a separate power source. Provides an integrated 10/100 Ethernet port and PCMCIA slot to support optional Netfinity Advanced System Management Token-Ring Connection (P/N 36L9654).
- A maximum quantity of one is supported.
- Required for all Netfinity servers containing a standard Advanced System Management Processor that are to be interconnected for system management support through a LAN or modem connection (Netfinity 5500 models 8660- 1..4xU are not supported). Optional Netfinity Advanced System Management PCI Adapter (P/N 01K7209) includes the content of this option. Up to 12 service processors may be interconnected (including standard and optional processors) with an aggregate connection length of no more than 91.4 meters (300 ft.). A customer-supplied Ethernet cable is required for each interconnection.
- Contains an IBM Turbo 16/4 Token-Ring PCI Card, which installs in the PCMCIA card slot of Netfinity Advanced System Management PCI Adapter (P/N 01K7209), and a PC Card to 9-pin D-Shell cable which is routed to a rear chassis cut-out. The Netfinity Advanced System Management PCI Adapter integrated Ethernet port and Netfinity Advanced System Management Token-Ring Connection cannot be connected or used together.
- Provides an ESCON MIC and DB9 Serial Port. Cables are not included but are available through S/390 channels. Contact your IBM representative for additional information.
- A maximum of two 9086001 adapters (installed in non-adjacent slots) are supported in a single Netfinity server.



## Netfinity 5600 Power, Monitor & Accessories

Part Number	Description	Part Number	Description
<b>Power<sup>1</sup></b>		<b>Conversion Kits</b>	
33L3760	Netfinity 250 W Hot-Swap Redundant Power Supply	37L6858	Netfinity 5Ux24D Tower-to-Rack Kit <sup>6</sup>
<b>Uninterruptable Power Supply (UPS)<sup>2</sup></b>		<b>Rack and NetBAY<sup>1</sup></b>	
94G3135	APC Smart-UPS 1000 (28 min. runtime at 245 Watts)	930842P	Netfinity Enterprise Rack
94G3136	APC Smart-UPS 1400 (43 min. runtime at 245 Watts)	930842X	Netfinity Enterprise Expansion Cabinet
94G6674	APC Smart-UPS 1400 RMB (34 min. runtime at 245 Watts) <sup>3</sup>	9306900	Netfinity Rack
94G6676	APC S3art-UPS 3000 RMB (84 min. runtime at 245 Watts) <sup>2</sup>	9306200	Netfinity NetBAY22
<b>Monitors<sup>4</sup></b>		<b>Keyboard and Mouse<sup>2</sup></b>	
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black <sup>4</sup>	28L3644	Space Saver II Keyboard <sup>3, 5</sup>
65474AN	G74 Color Monitor 17" (15.9" Viewable Image Size), stealth black <sup>5</sup>	01K1260	TrackPoint IV 104-Key Black Keyboard <sup>4, 5</sup>
65494AN	G96 Color Monitor 19" (17.9" Viewable Image Size), stealth black <sup>7</sup>	28L3621	Preferred Keyboard (stealth black) <sup>4</sup>
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black <sup>6</sup>	28L3673	Sleek 2-Button Stealth Black Mouse

1. Netfinity 5600 includes two 250W hot-swap power supplies, each with its own power cord. These standard power supplies are sufficient to operate fully configured systems; however optional Netfinity 250W Hot-Swap Redundant Power Supply (P/N 33L3760) is required to preserve redundancy if any of the following are exceeded:

### Single Processor Configuration

- Six SL hard disk drive (HDDs) and two PCI adapters  
(1 HH HDD = 2 SL, 1 tape = 2 SL, 1 PCI adapter = 2 SL)  
e.g. To preserve power supply redundancy with 3 PCI adapters only 4 SL HDDs can be installed before an optional power supply is required.

### Dual Processor Configuration

- Four SL hard disk drives (HDDs) and two PCI adapters  
(1 HH HDD = 2 SL, 1 tape = 2 SL, 1 PCI adapter = 2 SL)
- A "non-redundant" LED on the system unit will indicate when 250W has been exceeded. Netfinity 250 W Hot-Swap Redundant Power Supply (P/N 33L3760) includes a power cord which requires an additional power source. An independent power source such as a second UPS or second circuit is not required.

2. Stated runtimes and power are for typical configurations (approximately 70% of maximum capacity). For additional information see Appendix C: UPS Runtime Estimate.

3. Height is 3U. See "Rack and NetBAY" for supported IBM racks.

4. Netfinity 5600 uses an SVGA controller (S3 Trio 3D chipset) with 4 MB of video memory.

5. Installation within a rack requires optional Monitor Compartment (P/N 94G7444).

6. Installation within a rack requires optional Netfinity Flat Panel Monitor Rack Mount Kit (P/N 37L6857) and Netfinity Rack Keyboard Tray (P/N 28L4707). A space saver keyboard may coexist within the same 28L4707 keyboard tray.

7. Not supported for installation in a 19" rack.

1. Netfinity 5600 rack models are housed in a 19" rack mountable drawer and require one of the racks listed here. See IBM Netfinity Rack Cabinet and Options section for IBM rack supported devices.

2. Tower models include both a mouse and a keyboard. Rack models include neither.

3. Installation within a rack requires optional keyboard tray P/N 28L4707 (stows in "ready-to-use" position).

4. Installation within a rack requires optional keyboard tray P/N 28L4707. This keyboard cannot share a keyboard tray with a flat panel display.

5. Advanced TrackPoint IV features are not available on IBM Netfinity systems.

6. Planned availability of 4Q 1999.



### Netfinity 5600 Tape Options

Part Number	Tape Drives <sup>2</sup>	Bays Supported	SCSI Interface (bit)	Form Factor	Termination Included	68/50-pin Converter Incl.	Ext. Tape Enclosures <sup>1</sup>
00N7991	20/40 GB DDS/4 4-mm Internal Tape Drive	A, B	16 Ultra2 LVD <sup>2</sup>	3.5" HH or 5.25" HH	Y <sup>3</sup>	N	3510020, 3551001
01K1325	20/40 GB 8-mm Internal SCSI Tape Drive	A, B	16 <sup>2</sup>	5.25" HH	N <sup>4</sup>	N	3510020 <sup>5</sup> , 3551001
01K1320	20/40 GB DLT Internal SCSI Tape Drive	A/B <sup>6</sup>	8 <sup>2</sup>	5.25" FH	Y <sup>3</sup>	Y	3503BOX, 3551001
00N7990	40/80 GB DLT Internal SCSI Tape Drive	A/B <sup>6</sup>	16 LVD <sup>2</sup>	5.25" FH	N <sup>4</sup>	N	3503BOX <sup>5</sup> , 3551001
<b>Associated Options</b>							
32G3918	SCSI-2 16-bit Active Terminator	-	16	External	Y	N	3503BOX 3510020
<b>External Tape Enclosures</b>							
3510020	External Half High SCSI Storage Enclosure <sup>7</sup>	-	8/16	Desktop	N	N	-
3551001	NetMEDIA Storage Expansion Unit EL <sup>8</sup>	-	16	Rack	Y	N	-
10L7113	NetMEDIA Systems Management Adapter <sup>9</sup>	-	16	-	N	N	3551001
3503BOX	DLT External SCSI Enclosure <sup>10</sup>	-	16	Desktop	N	N	-
<b>External Tape Libraries<sup>11</sup></b>							
3502108	DLT Tape Autoloader	-	16	Desktop	Y	-	-
3502x14	DLT Tape Library	-	16	Desktop or Rack	Y	-	-
3503108	DLT8000 Tape Autoloader	-	16 LVD	Desktop	Y	-	-
3503x14	DLT8000 Tape Library	-	16 LVD	Desktop or Rack	Y	-	-

1. To determine cable requirements, note the tape drive's SCSI interface, the appropriate SCSI controller from the system configurator section, and the desired enclosure, then refer to Appendix D: Cables-Storage Units-Controllers.
2. Netfinity 5600 includes a wide two-drop terminated cable which is used for attachment of internal tape drives to a PCI Fast/Wide Ultra SCSI Adapter (P/N 02K3454) or, in the case where the hot-swap backplane is attached to a RAID controller, it attaches to the onboard wide Ultra2 LVD controller. This cable does not support LVD mode of operation.
3. Tape drive is capable of self termination.
4. Termination is provided by the system unit's standard SCSI cabling.
5. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).
6. Two half-high bays can be combined to support a full-high device.
7. Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either tape drive self termination or SCSI-2 16-bit Active Terminator (P/N 32G3918).
8. Provides a black 3U, 19" rack or NetBAY3 mountable tape enclosure. Provides two full high (FH) or four half high (HH) extended length 5.25" bays. External connector is 0.8-mm VHDCI. Includes two power supplies and two power cords.
9. Installs in 3551001. Provides repeater function and LVDS interface allowing longer cable lengths and auto-termination when the 3551001 is powered off.
10. Provides a black desktop DLT tape enclosure with a 68-pin high density external connector. Requires termination by the tape drive or by installation of a SCSI-2 16-bit Active Terminator (P/N 32G3918).
11. Tape library attributes and prerequisites are located in Appendix B: Tape Library Attributes.

NOTE: SCSI support for tape drives is provided by system unit onboard (standard) controller (no-RAID function) or PCI Fast Wide Ultra SCSI Adapter P/N 02K3454. Additional tape attributes can be found in Appendix A: Tape Drive Attributes.

For a complete list of all IBM and non-IBM option compatibility with Network Operating Systems and IBM Netfinity Servers, access the ServerProven™ compatibility pages on the Web at URL [www.ibm.com/pc/us/compat](http://www.ibm.com/pc/us/compat).

### Sample Configurations

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

#### High Availability Application Server

Part Number	Description	Quantity	Usage
8664-21Y	Netfinity 5600 (Pentium III 600EB/512 128 MB Tower)	1	-
33L3060	Netfinity 256 MB, 133 MHz SDRAM ECC RDIMM	1	384 MB total system memory
36L9744	Netfinity 91 GB Wide Ultra2 SCSI Hot-Swap SL HDD	2	91 mirrored for NOS
36L9749	Netfinity 18.2 GB 10K-3 Wide Ultra2 SCSI Hot-Swap SL HDD	4	36 GB RAID 5 with hot-spare
01K1325	20/40 GB 8-mm Internal SCSI Tape Drive	1	-
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter	1	RAID 1 for OS, RAID 5 for data
33L3760	Netfinity 250 W Hot-Swap Redundant Power Supply	1	Full power redundancy
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	
94G3135	APC Smart-UPS 1000	1	UPS

This tower server is configured to act as the foundation for business critical applications, applications your business cannot afford to be without. Configured with enough disk drives to mirror the operating system and provide a standard RAID 5 environment for data, optional hot-swap redundant power and UPS for power even during a blackout, this server represents the leading edge in high availability. An internal tape drive is included to back up that all important asset...data. A modem could be included to allow out-of-band (non-LAN) system management utilizing the integrated Netfinity Advanced System Management Processor.



### High Availability File Server

Part Number	Description	Quantity	Usage
8664-11Y	Netfinity 5600 (Pentium III 533EB/256 128 MB Tower)	1	-
36L9744	Netfinity 91 GB Wide Ultra2 SCSI Hot-Swap SL HDD	6	45 GB available disk and one hot spare
01K1325	20/40 GB 8-mm Internal SCSI Tape Drive	1	
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter	1	RAID 5 array with hot-spare
33L3760	Netfinity 250 W Hot-Swap Redundant Power Supply	1	Full power redundancy
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	-
94G3135	APC Smart-UPS 1000	1	-

This tower model is configured to meet the need of server consolidation. Many businesses are trying to get their arms around the dispersed departmental servers that have grown up around the enterprise. By moving multiple servers onto one platform there is only one system to manage, both hardware and software. There is potentially less expensive for service, software licenses, etc., and there is no need to worry about putting all your eggs in one basket because the Netfinity 5600 is designed for high availability. This configuration includes 56 GB of internal HDD storage, features a third power supply which provides fully redundant power, a UPS to help protect the system against a momentary electricity loss, and an internal tape drive that backs up, up to 40 GB per tape...in addition to all the standard features of the Netfinity 5600.





# IBM Netfinity 7000 M10 Configurator

Part Number	Processor Speed (MHz) <sup>2</sup>				Number of Processors Std./Max		L2 ECC Cache (KB)		Memory (Std/Max) (R=RDIMM)		Form Factor	Power Supply Quantity (Std/Max)			Hot-Swap (Power, Slots, HDD, Fans)		Redundancy (Optional, Standard)		Adv. System Management Processor <sup>3</sup>		Onboard Ethernet (Mbps)		SCSI Controller (Dual, Ultra, RAID, LVD)		Removable Media Bays (Total/Avail)		Internal Hard Disk Drive (Std/Max)		CD-ROM (IDE)		Bays (Total/Avail)		Slots (Total/Avail)	
8680-6RY <sup>1</sup>	500	1/4	512	256 MB/8 GB	Rack (11U)	2/3	P, S, H, F	S-Fans, S-Power <sup>4</sup>	Y	-	D, U	2/0	0/72.8 GB	32X-14X <sup>5</sup>	6/4	12/12																		
8680-7RY <sup>1</sup>	500	1/4	1024	256 MB/8 GB	Rack (11U)	2/3	P, S, H, F	S-Fans, S-Power <sup>4</sup>	Y	-	D, U	2/0	0/72.8 GB	32X-14X <sup>5</sup>	6/4	12/12																		
8680-8RY <sup>1</sup>	500	1/4	2048	256 MB/8 GB	Rack (11U)	2/3	P, S, H, F	S-Fans, S-Power <sup>4</sup>	Y	-	D, U	2/0	0/72.8 GB	32X-14X <sup>5</sup>	6/4	12/12																		
8680-1SY <sup>1</sup>	550	1/4	512	256 MB/8 GB	Rack (11U)	2/3	P, S, H, F	S-Fans, S-Power <sup>4</sup>	Y	-	D, U	2/0	0/72.8 GB	40X-17X <sup>5</sup>	6/4	12/12																		
8680-2SY <sup>1</sup>	550	1/4	1024	256 MB/8 GB	Rack (11U)	2/3	P, S, H, F	S-Fans, S-Power <sup>4</sup>	Y	-	D, U	2/0	0/72.8 GB	40X-17X <sup>5</sup>	6/4	12/12																		
8680-3SY <sup>1</sup>	550	1/4	2048	256 MB/8 GB	Rack (11U)	2/3	P, S, H, F	S-Fans, S-Power <sup>4</sup>	Y	-	D, U	2/0	0/72.8 GB	40X-17X <sup>5</sup>	6/4	12/12																		
8680-11Y <sup>1, 6</sup>	550	1/4	512	512 MB/4 GB <sup>7</sup>	Rack (11U)	2/3	P, S, H, F	S-Fans, S-Power <sup>4</sup>	Y	-	D, U	2/0	0/72.8 GB	40X-17X <sup>5</sup>	6/4	12/12																		
8680-21Y <sup>1, 6</sup>	550	1/4	1024	512 MB/4 GB <sup>7</sup>	Rack (11U)	2/3	P, S, H, F	S-Fans, S-Power <sup>4</sup>	Y	-	D, U	2/0	0/72.8 GB	40X-17X <sup>5</sup>	6/4	12/12																		

1. Housed in a 19" Rack mountable drawer and ships standard without a keyboard or mouse. See "Rack and NetBay" under "Netfinity 7000 M10 Power, Monitor & Accessories" for supported IBM racks.

2. Intel Pentium III Xeon processor.

3. Netfinity 7000 M10 includes a systems management adapter equivalent to the one shipped with option 01K7209 (Netfinity Advanced System Management PCI Adapter).

4. Fully configured systems may require an optional 3rd power supply for redundancy. See footnote for Netfinity 400W Hot-Swap Redundant Supply II (P/N 01K7951) for requirements.

5. Variable read rate. Actual playback speed will vary and is often less than the maximum possible.

6. These models include Advanced Chipkill memory, which provides a 100x improvement over standard ECC memory by detecting and correcting both single and double 4-bit memory errors.

7. The largest supported Chipkill memory expansion kit is 512 MB, which lowers the maximum "Chipkill" memory capacity to 4 GB.

## Netfinity 7000 M10 Processor Upgrades

Part Number	Processor Upgrades with 512 KB, 1 MB or 2 MB Cache	SMP Support <sup>1</sup>	Processor Speed/Cache Upgrade <sup>2</sup>
01K8006	Netfinity 7000 M10 400 MHz, 512 KB Upgrade with Pentium II Xeon Processor	1RU	-
01K8007	Netfinity 7000 M10 400 MHz, 1 MB Upgrade with Pentium II Xeon Processor	2RU	All 1RU
10L5895	Netfinity 7000 M10 450 MHz, 512 KB Upgrade with Pentium II Xeon Processor	3RU	All 1..2RU
10L5896	Netfinity 7000 M10 450 MHz, 1 MB Upgrade with Pentium II Xeon Processor	4RU	All 1..3RU
10L5897	Netfinity 7000 M10 450 MHz, 2 MB Upgrade with Pentium II Xeon Processor	5RU	All 1..4RU
28L4733	Netfinity 7000 M10 500 MHz/512 KB Upgrade with Pentium III Xeon Processor	6RY	All 1..5RU
28L4734	Netfinity 7000 M10 500 MHz/1 MB Upgrade with Pentium III Xeon Processor	7RY	All 1..6Rx
28L4735	Netfinity 7000 M10 500 MHz/2 MB Upgrade with Pentium III Xeon Processor	8RY	All 1..7Rx
33L5107	Netfinity 550 MHz /512 KB Upgrade with Pentium III Xeon Processor	1xY	All xRx
33L5108	Netfinity 550 MHz /1 MB Upgrade with Pentium III Xeon Processor	2xY	All xRx, 1xY
33L5109	Netfinity 550 MHz /2 MB Upgrade with Pentium III Xeon Processor	3SY	All xRx, All 1..2xY

1. Up to three additional processors may be installed, providing a maximum of four. All processors must be identical in type, speed, and cache size.

2. Requires removal of the standard processor. A maximum of four processors may be installed. All processors must be identical in type, speed and cache size. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access [www.ibm.com/pc/support](http://www.ibm.com/pc/support) and enter machine "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".



### Netfinity 7000 M10 Memory

Total Memory <sup>1</sup>	Model 1RU	All Models (except 1RU and x1Y)	Chipkill Models x1Y
128 MB	4 x 32MB DIMMs Std.	-	-
256 MB	-	4 x 64MB DIMMs Std.	-
384 MB	1 x 01K8044	-	-
512 MB	-	1 x 01K8044 <sup>2</sup>	4 x 128 MB DIMMs Standard
640 MB	1 x 01K8045	-	-
768 MB	-	1 x 01K8045	-
896 MB	3 x 01K8044	-	-
1024 MB	-	3 x 01K8044 <sup>3</sup>	1 x 28L4732 <sup>2</sup>
1408 MB	1 x 01K8044, 2 x 01K8045	-	-
1536 MB	-	1 x 01K8044, 2 x 01K8045 <sup>2</sup>	2 x 28L4732 <sup>2</sup>
2048 MB	4 x 01K8045 <sup>3, 4</sup>	4 x 01K8045 <sup>3, 4</sup>	3 x 28L4732 <sup>3</sup>
3072 MB	2 x 01K8045, 2 x 01K8046 <sup>2, 4</sup>	2 x 01K8045, 2 x 01K8046 <sup>2, 4</sup>	5 x 28L4732, 1 x 01K8004 <sup>5</sup>
4096 MB	4 x 01K8045, 2 x 01K8046, 1 x 01K8004 <sup>2, 4</sup>	4 x 01K8045, 2 x 01K8046, 1 x 01K8004 <sup>2, 4</sup>	7 x 28L4732, 1 x 01K8004 <sup>5</sup>
5120 MB	4 x 01K8044, 4 x 01K8046, 1 x 01K8004 <sup>5, 6</sup>	3 x 01K8044, 4 x 01K8046, 1 x 01K8004 <sup>5, 6</sup>	-
6148 MB	4 x 01K8045, 4 x 01K8046, 1 x 01K8004 <sup>5, 6</sup>	4 x 01K8045, 4 x 01K8046, 1 x 01K8004 <sup>5, 6</sup>	-
8 GB (max)	8 x 01K8046, 1 x 01K8004 <sup>5, 6</sup>	8 x 01K8046, 1 x 01K8004 <sup>5, 6</sup>	-

This table does not represent all possible memory configurations.

NOTE: 8-way interleaving can be obtained by installing identical memory in one or more of the following adjacent bank pairs: 1/2, 3/4, 5/6, 7/8 or by installing memory in both the standard and optional (P/N 01K8004) memory cards, both being identically configured. Greater than 8-way interleaving can be obtained by combining both 8-way interleaving methods (adjacent banks and identical memory cards). Netfinity 7000 M10 will recognize optimized configurations at boot-up and enable appropriate interleaving.

1. Network Operating Systems may limit the maximum amount of addressable memory. See operating system specifications for further information.

2. Can be configured for 8-way interleaving.

3. Can be configured for 8-way interleaving or greater than 8-way with Netfinity 7000 M10 Memory Expansion Card (P/N 01K8004).

4. Assumes removal of standard memory DIMMs.

5. Can be configured for greater than 8-way interleaving.

6. Requires removal of standard memory DIMMs.

Part Number	Memory Description <sup>1</sup>
01K8044	Netfinity 7000 M10 256 MB Memory Expansion Kit - 4 x 64 <sup>2</sup>
01K8045	Netfinity 7000 M10 512 MB Memory Expansion Kit - 4 x 128 <sup>2</sup>
28L4732	Netfinity 7000 M10 512 MB Advanced Memory Expansion Kit (Chipkill) - 4 x 128 <sup>2, 3</sup>
01K8046	Netfinity 7000 M10 1 GB Memory Expansion Kit - 4 x 256 <sup>2</sup>
01K8004	Netfinity 7000 M10 Memory Expansion Card <sup>4</sup>

1. Memory is four-way interleaved 50 ns, EDO, ECC, 168-pin DIMMs. Properly configured memory options allow eight-way or greater interleaving.

2. DIMM size must be consistent within a Bank. DIMM sizes may vary from Bank to Bank.

3. Advanced ECC DIMMs not only detect and correct single 4-bit memory errors, but detect and correct two 4-bit errors as well. These advanced memory DIMMs significantly improve reliability up to 100 times over current ECC technology. In order to provide this increased reliability for all installed memory, co-existence with other Netfinity 7000 M10 memory is not recommended.

4. Required for installation of DIMMs in Banks 5..8.

Standard Memory Card A Optional Memory Card B

Bank 4	Bank 8
Bank 3	Bank 7
Bank 2	Bank 6
Bank 1	Std. DIMM

Bank 4	Bank 8
Bank 3	Bank 7
Bank 2	Bank 6
Bank 1	Std. DIMM

Bank 4	Bank 8
Bank 3	Bank 7
Bank 2	Bank 6
Bank 1	Std. DIMM

Bank 4	Bank 8
Bank 3	Bank 7
Bank 2	Bank 6
Bank 1	Std. DIMM



## Netfinity 7000 M10 Hard Disk Drive (HDD) Storage

Total Internal Storage <sup>1</sup>	7200 RPM Hard Disk Drives (HDDs)			10,000 RPM HDDs		
	9.1 GB	18.2 GB	36.4 GB	9.1 GB	18.2 GB	36.4 GB
0 GB	Standard on Base Models			Standard on Base Models		
9.1 GB	1 x 01K8053	-		1 x 36L9806	-	-
18.2 GB	2 x 01K8053 or	1 x 02K0440		2 x 36L9806 or	1 x 36L9807	
27.2 GB	3 x 01K8053	-		3 x 36L9806	-	-
36.4 GB	4 x 01K8053 or	2 x 02K0440 or	1 x 02K0441	4 x 36L9806 or	2 x 36L9807 or	1 x 36L9808
54.6 GB	-	3 x 02K0440	-	-	3 x 36L9807	-
72.8 GB (max)	-	4 x 02K0440 or	2 x 02K0441	-	4 x 36L9807 or	2 x 36L9808

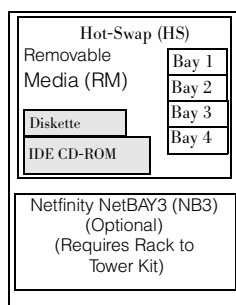
This table does not represent all possible hard drive configurations.

1. Total Internal Storage listed is within  $\pm 0.2$  GB unless otherwise noted.

Bay	Form Factor	Height	Front Access	Usage	Part Number	Description	RPM	Height	Bays Supported	Max Qty.
-	3.5"	SL	Yes	Diskette	<b>Internal Hard Disk Drives (HDD)</b>					
-	5.25"	HH	Yes	IDE CD-ROM	01K8053	Netfinity 9.1GB Wide Ultra SCSI SCA-2 SL HDD	7200	SL	1..4	4
1..4	HS	SL <sup>1</sup>	Yes	Open	02K0440	Netfinity 18.2 GB Wide Ultra SCSI Hot-Swap SL HDD	7200	SL	1..4	4
NB3 <sup>2</sup>	19" Rack	3U	Yes	Open	02K0441	Netfinity 36.4 GB Wide Ultra SCSI Hot-Swap HDD	7200	HH <sup>1</sup>	1/2, 3/4	2
					36L9806	Netfinity 9.1 GB 10K-3 Wide Ultra SCSI Hot-Swap SL HDD	10,000	SL	1..4	4
					36L9807	Netfinity 18.2 GB 10K-3 Wide Ultra SCSI Hot-Swap SL HDD	10,000	SL	1..4	4
					36L9808	Netfinity 36.4 GB 10K-3 Wide Ultra SCSI Hot-Swap HDD	10,000	HH <sup>1</sup>	1/2, 3/4	2
					<b>External Storage Expansion Units<sup>2</sup></b>			<b>Form Factor</b>		
					35202RU	Netfinity EXP15 Storage Expansion Unit		Rack (3U)		
					35301RU	Netfinity EXP200 Storage Expansion Unit		Rack (3U)		
					37L5857	Netfinity EXP200 Rack-to-Tower Conversion Kit		Tower		

1. Two slim-line (SL) bays can be combined to support a single half-high device.

2. A total of three optional 3U NetBAY3s can be stacked beneath a Netfinity 7000 M10 which has Netfinity 7000 M10 Rack-to-Tower Conversion Kit installed. See IBM Netfinity NetBAY3 Stackable Enclosure section for supported devices



1. Two slim-line (SL) bays can be combined to support a single half-high (HH) device.

2. Not supported by the onboard external SCSI port. Select an optional SCSI controller then refer to see Appendix D: Cables-Storage Units-Controllers to confirm the controller supports the desired External Storage Expansion Unit and to select a supported cable. For HDD or other expansion unit options, see the specific expansion unit section.

### Internal SCSI Cabling

Netfinity 7000 M10 systems contain a backplane supporting four hot-swap drive bays. The backplane is connected to one of the two onboard Ultra SCSI controllers through a 16-bit SCSI cable. If a RAID adapter or other supported SCSI adapter is installed for attachment to the internal hard disk drives, the 16-bit SCSI backplane cable is moved from the standard Ultra SCSI controller to the desired controller. The onboard external SCSI port contains a 0.8mm Very High Density Connection Interface (VHDCI) connector and can be used to attach up to 15 SCSI devices with the appropriate SCSI cable.





## Netfinity 7000 M10 I/O Options

Part Number	Description	Adapter Length	PCI Support	Slots Supported <sup>1</sup>	Hot-Plug <sup>2</sup>
<b>Storage Controllers<sup>3</sup></b>					
01K7364	Netfinity ServeRAID-3L Ultra2 SCSI Adapter <sup>4,5</sup>	Full	32-bit	1..12 <sup>6</sup>	X
37L6086	Netfinity ServeRAID 3-HB Ultra2 SCSI Adapter <sup>7</sup>	Full	32/64-bit	1..12 <sup>6</sup>	X
02K3454	PCI Fast/Wide Ultra SCSI Adapter	Half	32-bit	1..12	-
01K7297	Netfinity Fibre Channel PCI Adapter <sup>8</sup>	Half	32/64-bit	1..12	-
09L2123	Advanced SerialRAID/X Adapter	Full	32-bit	1..12 <sup>9</sup>	-
<b>Networking<sup>10</sup></b>					
<b>Ethernet</b>					
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2	Half	32-bit	1..12	X
08L3341	Netfinity 10/100 Fault Tolerant Adapter	Half	32-bit	1..12	X
34L0301	Netfinity Gigabit Ethernet SX Adapter	Half	32/64-bit	1..12	X
<b>Token Ring</b>					
34L0501	Token-Ring 100/16/4 High-Speed PCI Adapter	Half	32-bit	1..12	-
34L0601	Token-Ring 16/4 PCI Adapter 2	Half	32-bit	1..12	X
<b>Communications</b>					
33L4618	PCI V90 56 Data/Fax Modem <sup>11</sup>	Half	32-bit	1..12	-
37L1414	Serial I/O SST8P DB Adapter <sup>12</sup>	Half	32-bit	1..12 <sup>12</sup>	-
37L1415	Serial I/O SST16P RJ Adapter <sup>12</sup>	Half	32-bit	1..12 <sup>12</sup>	-
37L1423	Serial I/O SST16P DB Adapter <sup>12</sup>	Half	32-bit	1..12 <sup>12</sup>	-
37L1416	Serial I/O SST128P Expandable Adapter <sup>12</sup>	Half	32-bit	1..12 <sup>12</sup>	-
<b>Systems Management<sup>13</sup></b>					
03K9309	Netfinity Advanced System Management Interconnect Cable Kit <sup>14</sup>	-	-	-	-
36L9654	Netfinity Advanced System Management Token-Ring Connection <sup>15</sup>	-	-	-	-
02K6545	UltraSlim 56W AC Adapter <sup>16</sup>				
<b>Host Attach</b>					
9086001	Netfinity ESCON Adapter <sup>17</sup>	Full	32-bit	1..12 <sup>18</sup>	-

1. PCI Slots 1..5 support 64-bit or 32-bit operations. PCI Slots 6..12 support 32-bit operations.

2. All 12 PCI slots are Hot Plug capable using IBM's Active PCI Technology For Network Operating System support access URL [www.ibm.com/pc/us/compat](http://www.ibm.com/pc/us/compat).

3. Netfinity 7000 M10 includes two onboard Wide Ultra SCSI controllers, one internal connector and one external port with a 0.8 mm Very High Density Connection Interface (VHDCI), which can be used to attach up to 15 SCSI devices with the appropriate SCSI cable.

4. All ServeRAID-3x adapters can be upgraded with the same enhanced software utilities and firmware included with ServeRAID-3HB. The download is available for no charge from [www.ibm.com/pc/support](http://www.ibm.com/pc/support). select "Server" in Brand pulldown, "ServeRAID" in the Family pulldown and then "Downloadable files". The upgrade should be considered for installations with firmware less than Version 3.5.

5. Netfinity ServeRAID-3L Ultra2 SCSI Adapter (P/N 01K7364) provides either one internal or one external (0.8 mmVHDCI) LVDS SCSI channel.

6. A total quantity of eight, in any combination of 01K7364, 37L6086 and 01K7207 is supported.

7. Netfinity ServeRAID-3HB Ultra2 SCSI Adapter (P/N 37L6086) provides one internal and two external (0.8 mm VHDCI) LVDS SCSI channels. The internal channel can be configured for external usage (0.8 mm VHDCI) providing a total of three external LVDS SCSI channels. Includes 32 MB of mirrored battery-backup cache, which helps protect against data loss in write-back cache mode in the event of a power outage or adapter maintenance.

8. See Netfinity Fibre Channel Solutions section for additional configuration information.

9. A maximum quantity of four is supported.

10. Netfinity 7000 M10 does not include an onboard network controller.

11. Due to homologation variances, modem availability may differ by country.

12. See Appendix E for details on Serial I/O options and configuration limitations. A maximum of four Serial I/O adapters (any combination of P/N 37L1414, 37L1415, 37L1416, 37L1423) may be installed.

13. Netfinity 7000 M10 ships standard with a Netfinity Advanced System Management PCI Adapter. Unlike optional Netfinity Advanced System Management PCI Adapter (P/N 01K7209), a 56-watt AC adapter and interconnect cable are NOT included and must be ordered separately if desired.

14. Required for all Netfinity Servers containing a standard Advanced System Management Processor that are to be interconnected for system management support through a LAN or modem connection (Netfinity 5500 models 8660 1..4xU are not supported). Up to 12 service processors may be interconnected (including standard and optional processors) with an aggregate connection length of no more than 91.4 meters (300 ft.). A customer-supplied Ethernet cable is required for each interconnection.

15. Contains an IBM Turbo 16/4 Token-Ring PCI Card, which installs in the PCMCIA card slot of Netfinity Advanced System Management PCI Adapter and a PC Card to 9-pin D-Shell cable which is routed to a rear chassis cut-out. The Netfinity Advanced System Management PCI Adapter's integrated Ethernet port and Netfinity Advanced System Management Token-Ring Connection cannot be connected or used together. The firmware level of the integrated Netfinity Advanced System Management PCI Adapter must be at level 32A or later. To download the latest firmware, access URL [www.ibm.com/pc/us/netfinity](http://www.ibm.com/pc/us/netfinity). Select "Server Support", "Family", "Model", "Downloadable Files" and finally "Advanced System Management".

16. Although the 7000 M10 integrated Netfinity Advanced System Management PCI Adapter is powered continuously through the redundant power supply subsystem, an even higher level of availability is offered with the addition of UltraSlim 56W AC Adapter by allowing an independent power source or connection to a separate optional UPS.

17. Provides an ESCON MIC and DB9 Serial Port. Cables are not included but are available through S/390 channels. Contact your IBM representative for additional information.

18. A maximum of two 9086001 adapters (installed in non-adjacent slots) are supported in a single Netfinity server.

### Full Length Adapter Slots / Power Supply Bays

Slot 1: PCI, Hot-Plug, 32/64-bit, Full Length	Slot 2: PCI, Hot-Plug, 32/64-bit, Full Length	Slot 3: PCI, Hot-Plug, 32/64-bit, Full Length	Slot 4: PCI, Hot-Plug, 32/64-bit, Full Length	Slot 5: PCI, Hot-Plug, 32/64-bit, Full Length	Slot 6: PCI, Hot-Plug, 32-bit, Full Length	Slot 7: PCI, Hot-Plug, 32-bit, Full Length	Slot 8: PCI, Hot-Plug, 32-bit, Full Length	Slot 9: PCI, Hot-Plug, 32-bit, Full Length	Slot 10: PCI, Hot-Plug, 32-bit, Full Length	Slot 11: PCI, Hot-Plug, 32-bit, Full Length	Slot 12: PCI, Hot-Plug, 32-bit, Full Length
Standard on all models 400 W Hot-Swap Power Supply				Standard on all but 8660-1RU 400 W Hot-Swap Power Supply Optional on 8660-1RU (P/N 01K7951)				Optional 400 W Hot-Swap Redundant Power Supply II (P/N 01K7951)			



## Netfinity 7000 M10 Power, Monitor & Accessories

Part Number	Description
<b>Power<sup>1</sup></b>	
01K7951	Netfinity 400W Hot-Swap Redundant Power Supply II <sup>2</sup>
01K7952	Netfinity 7000 M10 Dual Cord Power Unit <sup>3</sup>
<b>Uninterruptible Power Supply (UPS)<sup>4</sup></b>	
94G6674	APC Smart-UPS 1400RMB (12 min. runtime at 525 Watts) <sup>5</sup>
94G6676	APC Smart-UPS 3000RMB (35 min. runtime at 525 Watts) <sup>5</sup>
<b>Monitors</b>	
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black <sup>6</sup>
65474AN	G74 Color Monitor 17" (15.9 Viewable Image Size), stealth black <sup>6</sup>
65494AN	G96 Color Monitor 19" (17.9" Viewable Image Size), stealth black <sup>6</sup>
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black <sup>6</sup>

1. Netfinity 7000 M10 systems containing a single power supply (8680-1RU) do not provide power supply redundancy and require optional power supply 01K7951 when configurations contain one or more of the following:

- Netfinity 7000 M10 Memory Expansion Card (P/N 01K8004)
- Three processors
- Six PCI adapters

Netfinity 7000 M10 systems containing two power supplies (standard on all models except 8680-1RU) provide power supply redundancy and only require optional power supply 01K7951 when redundancy is required for configurations containing one or more of the following:

- Netfinity 7000 M10 Memory Expansion Card (P/N 01K8004)
- Three processors
- Six PCI adapters

2. Includes a power cord which is not used. No additional power source is required.

3. Provides power cord redundancy for the Netfinity 7000 M10. A second power source is required. Even though a second UPS may provide a redundant power source, systems management software does not currently take advantage of its power outage alerts.

4. Stated runtimes and power are for typical configurations (approximately 70% of maximum capacity). For additional information, see Appendix C: UPS Runtime Estimate.

5. Height is 3U. See "Rack and NetBAY" for supported IBM racks.

6. Installation within a rack requires optional Monitor Compartment (P/N 94G7444).

7. Not supported for installation in a 19" rack.

8. Installation within a rack requires optional Netfinity Flat Panel Monitor Rack Mount Kit (P/N 37L6857) and Netfinity Rack Keyboard Tray (P/N 28L4707). A space saver keyboard may coexist within the same 28L4707 keyboard tray.

Part Number	Description
<b>Conversion Kits</b>	
01K8005	Netfinity 7000 M10 Rack-to-Tower Conversion Kit <sup>1</sup>
<b>Rack and NetBAY<sup>2</sup></b>	
930842P	Netfinity Enterprise Rack
930842X	Netfinity Enterprise Extension Cabinet
9306900	Netfinity Rack
9306200	Netfinity NetBAY22
10L6912	Netfinity NetBAY3 <sup>3</sup>
<b>Keyboard and Mouse<sup>4</sup></b>	
28L3644	Space Saver II Keyboard <sup>5,7</sup>
01K1260	TrackPoint IV 104-Key Black Keyboard <sup>6,7</sup>
28L3621	Preferred Keyboard (stealth black) <sup>6</sup>
28L3673	Sleek 2-Button Stealth Black Mouse

1. Includes casters, which can also be used with NetBAY3.

2. Netfinity 7000 Mxx rack models are housed in a 19" rack mountable drawer and require one of the racks listed here. See "IBM Netfinity Rack Cabinet and Options" section for IBM rack supported devices.

3. A maximum of three NetBAY3 enclosures may be stacked beneath a supported Netfinity tower server (conversion kit 01K8005 required). See IBM Netfinity NetBAY3 Stackable Enclosure section for supported devices.

4. Netfinity 700 M10 ships without a keyboard or mouse.

5. Installation within a rack requires optional keyboard tray P/N 28L4707 (stows in "ready-to-use" position).

6. Installation within a rack requires optional keyboard tray P/N 28L4707. This keyboard cannot share a keyboard tray with a flat panel display.

7. Advanced TrackPoint IV features are not available on IBM Netfinity systems.



### Netfinity 7000 M10 Tape Options

Part Number	Description	Bays Supported	SCSI Interface (bit)	Form Factor	Termination Included	68/50-pin Converter Incl.	Ext. Tape Encl. <sup>1</sup>
01K1282	12/24 GB DDS/3 4-mm Internal Tape Drive	N/A <sup>2</sup>	8	3.5"HH or 5.25"HH	Y <sup>6</sup>	Y	3510020
01K1319	10/20 GB NS Internal SCSI Tape Drive	N/A <sup>2</sup>	8	3.5"SL or 5.25"HH	Y <sup>6</sup>	Y	3510020, 3551001
01K1325	20/40 GB 8-mm Internal SCSI Tape Drive	N/A <sup>2</sup>	16	5.25"HH	N	N	3510020 <sup>4</sup> , 3551001
01K1320	20/40 GB DLT Internal SCSI Tape Drive	N/A <sup>2</sup>	8	5.25"FH	Y <sup>6</sup>	Y	3503BOX, 3551001
04K0149	35/70 GB DLT Internal SCSI Tape Drive	N/A <sup>2</sup>	16	5.25"FH	N	N	3503BOX <sup>4</sup> , 3551001
00N7990	40/80 GB DLT Internal SCSI Tape Drive	N/A <sup>2</sup>	16 LVD	5.25" FH <sup>1</sup>	N	N	3503BOX <sup>4</sup> , 3551001
<b>Associated Options</b>							
32G3918	SCSI-2 16-bit Active Terminator	-	16	External	Y	N	3510020, 3503BOX
<b>External Tape Enclosures</b>							
3510020	External Half High SCSI Storage Enclosure <sup>5</sup>	-	8/16	Desktop	N	N	-
3551001	NetMEDIA Storage Expansion Unit EL <sup>6</sup>	-	16	Rack	Y	N	-
10L7113	NetMEDIA Systems Management Adapter <sup>7</sup>	-	16	-	N	N	3551001
3503BOX	DLT External SCSI Enclosure <sup>8</sup>	-	16	Desktop	N	N	-
<b>External Tape Libraries<sup>9</sup></b>							
3502108	DLT Tape Autoloader	-	16	Desktop	Y	-	-
3502x14	DLT Tape Library	-	16	Desktop or Rack	Y	-	-
3503108	DLT8000 Tape Autoloader	-	16 LVD	Desktop	Y	-	-
3503X14	DLT8000 Tape Library	-	16 LVD	Desktop or Rack	Y	-	-
3570xxx	Magstar MP 3570 Tape Subsystem (models B2x and C2x)	-	Differential	Rack	Y	-	-

1. To determine cable requirements, note the tape drive's SCSI interface, the appropriate SCSI controller from the system configurator section and the desired enclosure, then refer to Appendix D: Cables - Storage Units - Controllers.

2. Netfinity 7000 M10 supports tape drives installed in external enclosures only. See External Tape Enclosure column.

3. Tape drive is capable of self termination.

Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either tape drive self-termination or SCSI-2 16-bit Active Terminator (P/N 32G3918).

4. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).

5. Provides a black desktop DLT tape enclosure. External connector is 68-pin high density. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).

6. Provides a black 3U, LVD, 19" rack or NetBAY3 mountable tape enclosure. Provides two full high (FH) or four half high (HH) extended length 5.25" bays. External connector is 0.8mm VHDCI. Includes two power supplies and two power cords.

7. Installs in 3551001. Provides repeater function and LVDS interface allowing longer cable lengths and auto-termination when the 3551001 is powered off.

8. Provides a black desktop DLT tape enclosure with a 68-pin high density external connector. Requires termination by the tape drive or by installation of a SCSI-2 16-bit Active Terminator (P/N 32G3918).

9. Tape library attributes and prerequisites are located in Appendix B: Tape Library Attributes.

NOTE: SCSI support for tape drives is provided by system unit onboard (standard) controller (no-RAID function) or PCI Fast Wide Ultra SCSI Adapter P/N 02K3454. Additional tape attributes can be found in Appendix A: Tape Drive Attributes.



### Sample Configurations

The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

#### High Availability-Rack

Part Number	Description	Quantity	Usage
8680-7RY	Netfinity 7000 M10 (PIII Xeon 500-1 MB/256 MB/Rack)	1	Power Redundancy standard
28L4734	Netfinity 7000 M10 500 MHz/1 MB Upgrade with Pentium III Xeon Processor	1	Total SMP processors: Two
28L4732	Netfinity 7000 M10 512 MB Advanced Memory Expansion Kit- 4x128	1	Total: 512 MB <sup>1</sup>
01K8053	Netfinity 91 GB Wide Ultra SCSI SCA-2 SL HDD	4	-
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2	1	
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter	1	RAID Controller
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	-
28L3644	Space Saver II Keyboard	1	Includes TrackPoint
94G6676	APC Smart-UPS 3000RMB	1	-
<b>External Storage</b>			
3551001	NetMEDIA Storage Expansion Unit EL	1	External Tape Drive Enclosure
00N7990	40/80 GB DLT Internal SCSI Tape Drive	2	Installs in 3551001
35202RU	Netfinity EXP15	1	Provides additional 10 bays
03K9310	Netfinity 2M Ultra2 SCSI Cable	2	EXP15 to ServeRAID-3HB, Tape to Onboard
36L9809	Netfinity EXP 91 GB 10K-3 Wide Ultra SCSI Hot-Swap HDD	6	RAID 5 with Hot-Spare in EXP15.
<b>Rack Options</b>			
9306200	Netfinity NetBAY22	1	Monitor and Keyboard mount on top
94G6670	Blank Filler Panel Kit	1	-

1. Advanced ECC DIMMs not only detect and correct single 4-bit memory errors but detect and correct two 4-bit errors as well. These advanced memory DIMMs significantly improve reliability up to 100 times over current ECC technology. In order to provide this increased reliability for all installed memory, co-existence with other Netfinity 7000 M10 memory is not recommended and has therefore been removed in this sample configuration.

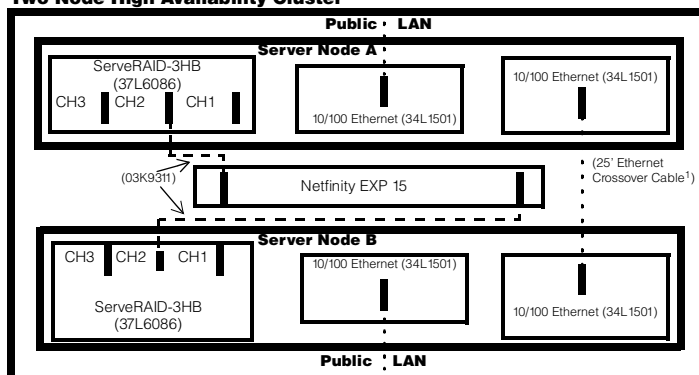
This high availability server is configured to act as the foundation for business critical applications, applications your business cannot afford to be without. The configuration includes enough disk drives to mirror the operating system and provide a RAID 5 data environment, power supply redundancy by the server and EXP15 and a UPS for power even during a blackout. A rack mounted tape drive is included to back-up that all important asset.....data. This server represents the leading edge in high availability.

#### Notes/Exchange-Stack

Part Number	Description	Quantity	Usage
8680-2SY	Netfinity 7000 M10 (PIII Xeon 550-1 MB/256 MB/Rack)	1	-
33L5108	Netfinity 550 MHz/ 1 MB Upgrade with Pentium III Xeon Processor	3	Total SMP processors: Four
01K8045	7000 M10 512 MB Memory Expansion Kit - 4x128	2	Total: 3GB <sup>1</sup> , 8-way interleaved
01K8046	Netfinity 7000 M10 1 GB Memory Expansion Kit - 4x256	2	Total: 3GB <sup>1</sup> , 8-way interleaved
01K8004	Netfinity 7000 M10 Memory Expansion Card	1	Enables 8-way interleaving configuration
36L9806	Netfinity 91 GB 10K-3 Wide Ultra SCSI Hot-Swap SL HDD	2	NOS Mirroring
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2	2	-
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter	1	RAID Controller
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	-
28L3644	Space Saver II Keyboard	1	Includes TrackPoint
01K7951	Netfinity 400W Hot-Swap Redundant Power Supply II	1	Required to preserve power redundancy
94G6676	APC Smart-UPS 3000RMB	1	-
<b>External Storage</b>			
3551001	NetMEDIA Storage Expansion Unit EL	1	External Tape Drive Enclosure
00N7990	40/80 GB DLT Internal SCSI Tape Drive	2	Installs in 3551001
35202RU	Netfinity EXP15	1	Provides additional 10 bays
03K9310	Netfinity 2M Ultra2 SCSI Cable	2	EXP15 to ServeRAID-3H, Tape to System
36L9810	Netfinity EXP 18.2 GB 10K-3 Wide Ultra SCSI Hot-Swap HDD	10	RAID 5 with Hot-Spare in EXP15
<b>Stack Options</b>			
01K8005	Netfinity 7000 M10 Rack-to-Tower Conversion Kit	1	Monitor and Keyboard mount on top
10L6912	Netfinity NetBAY3	3	Provides space for EXP15, UPS and Tape

1. Configuration for 8-way interleaving with Netfinity 7000 M10 Memory Expansion Card (P/N 01K8004) requires removal of standard memory.

# Two Node High Availability Cluster



1. Customer supplied Ethernet Crossover Cable may vary in length up to a maximum of 25' (7.6 m).

# Two Node High Availability Cluster

Part Number	Description	Quantity	Usage
<b>Server Nodes A &amp; B</b>			
8680-3SY	Netfinity 7000 M10 (PIII Xeon 550-2 MB/256 MB/Rack) (11U)	2	-
33L5109	Netfinity 550 MHz/2 MB Upgrade with Pentium III Xeon Processor	6	Total SMP processors: 4 each
01K8044	Netfinity 7000 M10 256 MB Memory Expansion Kit	2	-
01K8046	Netfinity 7000 M10 512 MB Memory Expansion Kit	4	Total: 1.5 GB, 8-way interleave capable
01K8004	Netfinity 7000 M10 Memory Expansion Card	2	Optimizes 8-way interleaving
01K7364	Netfinity ServeRAID-3L Ultra2 SCSI Adapter	2	1 per node for NOS HDDs
01K8053	Netfinity 9.1 GB Wide Ultra SCSI SCA-2 SL HDD	4	NOS on Mirrored HDDs
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2 <sup>1</sup>	4	1 Private Interconnect, 1 public
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter <sup>2</sup>	2	Three channels for EXP15s
01K7951	Netfinity 400W Hot-Swap Redundant Power Supply II	2	Required to preserve power redundancy
94G6676	APC Smart-UPS 3000RMB (3U)	2	Provides redundant power sources
<b>External Storage</b>			
3551001	NetMEDIA Storage Expansion Unit EL (3U)	1	External Tape Drive Enclosure
03K9310	Netfinity 2M Ultra2 SCSI Cable <sup>3</sup>	1	Attaches 3551001 to onboard SCSI
00N7990	40/80 GB DLT Internal SCSI Tape Drive	2	Installs in 3551001
35202RU	Netfinity EXP15 (3U) <sup>2</sup>	1	-
36L9810	Netfinity EXP 18.2 GB 10K-3 Wide Ultra SCSI Hot-Swap HDD	10	RAID 5 Shared Storage
03K9311	Netfinity 4.2 M Ultra2 SCSI Cable <sup>2, 3</sup>	2	Attach EXP15 to ServeRAID-3HBs
<b>Shared (or single occurrence) Resources</b>			
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black	1	Mounts in keyboard tray
28L3644	Space Saver II Keyboard	1	Includes TrackPoint
<b>Industry Standard 19" Rack, EIA-310D, Min. depth of 29.23"</b>			
9306900	9306-900 Netfinity Rack	1	-
37L6857	Netfinity Flat Panel Monitor Rack-Mount Kit (3U)	1	Mounts in keyboard tray
28L4707	Netfinity Rack Keyboard Tray	1	-
28L0542	Netfinity Console Server Selector Switch (4-port)	1	-
94G6667	Power Cable-Type A14 <sup>3</sup>	5	-
94G7447	12 ft Console Cable Set	2	-
94G6669	Side Panel Kit	1	-
94G6670	Blank Filler Panel Kit	1	-

1. Requires customer supplied Ethernet Crossover Cable which may vary in length up to a maximum of 25' (7.6 m).

2. By replicating these items, up to a total quantity of four ServeRAID-3HB Adapters (plus options) and eleven EXP15s can provide over 2 Terabytes of storage. Additional power and rack space will be required.

3. Cable length requirements are dependent on component placement within the rack or rack suite. To determine specific configuration requirements use the Netfinity Rack Configurator which is downloadable from Web site [www.ibm.com/pc/us/netfinity/tech\\_library.html](http://www.ibm.com/pc/us/netfinity/tech_library.html) "Configuration Tools".

Clustering is a group of interconnected computers used as a single, unified computing resource. Clustering Netfinity servers, like the IBM Netfinity 7000 M10, provides a high availability solution to keep you in touch with the key applications you need to run your business.

This sample configuration consists of paired IBM Netfinity 7000 M10 cluster nodes equipped with four-way SMP capability and redundant power supplies. Microsoft Cluster Service (MSCS) has been validated IBM Netfinity 7000 M10 servers, using the Netfinity ServeRAID-3HB with the EXP15 Storage Expansion Unit. MSCS allows two configured servers, referred to as nodes, to be connected together to form a cluster. Providing system redundancy means that a complete server can fail and client access to server resources is largely unaffected. MSCS extends this theme by also allowing for software failures at an application level as well as an operating system level. If the operating system fails, all applications and services can be restarted on another server, and if just one application fails, it can be managed by MSCS individually. An additional independent network connection is used to perform monitoring within the cluster. One or more disk subsystems are attached to both nodes. In the above example, a Netfinity EXP15 was selected and the Netfinity ServeRAID-3HB Ultra2 SCSI Adapters provide the I/O control. Netfinity ServeRAID-3HB handles the "SCSI heartbeat" connection without the need for a dedicated SCSI connection and logically attaches the quorum disk, which allows arbitration when a failure occurs. Additional information on IBM Netfinity and IBM PC Server Clustering Solutions may be found on the World Wide Web by accessing URL [www.ibm.com/pc/us/netfinity/clustering.html](http://www.ibm.com/pc/us/netfinity/clustering.html).



# IBM Netfinity 8500R Configurator

Part Number	Processor Speed (MHz) <sup>2</sup>	Number of Processors (Std./Max)	L2 ECC Cache (KB)	Memory (Std./Max) (R=RDIMM)	Form Factor	Power Supply Quantity (Std./Max)	Hot-Swap (Power, Slots, HDD, Fans)	Redundancy (Optional, Standard)	Adv. System Management Processor <sup>3</sup>	Onboard Ethernet (Mbps)	SCSI Controller (Dual, Ultra, RAID, LVD)	Removable Media Bays (Total/Avail)	Internal Hard Disk Drive (Std./Max)	CD-ROM (IDE)	Bays (Total/Avail)	Slots (Total/Avail)
8681-4RY <sup>1</sup>	550	1/8	512	256 MB <sup>R</sup> /16GB	Rack (8U)	3/3	P, S, H, F	S-Fans, S-Power	Y	-	D, U2, L	2/0	0/72.8 GB	40X-17X <sup>4</sup>	4/2	12/12
8681-5RY <sup>1</sup>	550	1/8	1024	512 MB <sup>R</sup> /16 GB	Rack (8U)	3/3	P, S, H, F	S-Fans, S-Power	Y	-	D, U2, L	2/0	0/72.8 GB	40X-17X <sup>4</sup>	4/2	12/12
8681-6RY <sup>1</sup>	550	1/8	2048	512 MB <sup>R</sup> /16 GB	Rack (8U)	3/3	P, S, H, F	S-Fans, S-Power	Y	-	D, U2, L	2/0	0/72.8 GB	40X-17X <sup>4</sup>	4/2	12/12

1. Housed in a 19" Rack mountable drawer and ships standard without a keyboard or mouse. See "Rack and NetBay" under "Netfinity 8500R Power, Monitor & Accessories" for supported IBM racks.
2. Intel Pentium III Xeon processor.
3. Netfinity 8500R includes a systems management adapter equivalent to the one shipped with option 01K7209 (Netfinity Advanced System Management PCI Adapter).
4. Variable read rate. Actual playback speed will vary and is often less than the maximum possible.

## Netfinity 8500R Processor Upgrades

Part Number	Processor Upgrades with 512 KB, 1 MB or 2 MB Cache <sup>1</sup>	SMP Support	Processor Speed/Cache Upgrade <sup>4</sup>
33L5103	Netfinity 8500R 550 MHz/512 KB Upgrade with Pentium III Xeon Processor <sup>3</sup>	4RY <sup>2, 3</sup>	-
33L5104	Netfinity 8500R 550 MHz/1 MB Upgrade with Pentium III Xeon Processor <sup>3</sup>	5RY <sup>2, 3</sup>	4RY
33L5105	Netfinity 8500R 550 MHz, 2 MB Upgrade with Pentium III Xeon Processor <sup>3</sup>	6RY <sup>2, 3</sup>	4..5RY
28L4730	Netfinity 8500R>4-Way Enablement Kit (1X SRAM) <sup>5</sup>	All	All
28L4727	Netfinity 8500R>4-Way Enablement Kit (4X SRAM) <sup>5</sup>	All	All

1. Netfinity 8500R architecture optimizes memory and bus performance using a 100 MHz, five-port crossbar core chipset. Up to eight Pentium III Xeon processors are supported on two 100 MHz P-6 CPU buses. The recommended order of processor installation is: Sockets A1, A3, A2, A4, B1, B3, B2, B4.
2. Up to seven additional processors may be installed, providing a maximum of eight. All processors must be identical in type, speed, and cache size.
3. For installation of greater than four processors, a Netfinity 8500R>4-way Enablement Kit (1X SRAM, P/N 28L4730) or (4X SRAM, P/N 28L4727) is required. The option of using either kit with any processor/cache combination provides the opportunity to configure for multiple performance levels. All four standard processor sockets should be populated prior to installing processors on an Enablement Kit.
4. Requires removal of the standard processor(s). A maximum of eight processors may be installed. Greater than four requires Enablement Kit P/N 28L4730 or 28L4727. For better performance, all four standard processor sockets should be populated prior to installing processors on an Enablement Kit. All processors must be identical in type, speed and cache size. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access [www.ibm.com/pc/support](http://www.ibm.com/pc/support) and enter machine "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".
5. Netfinity 8500R>4-Way Enablement Kits consist of a processor daughter board with four Pentium III Xeon processor sockets with terminators. They contain either two-1X (256 K entries) or two-4x (1 M entries) cache coherency filter modules used to improve bus utilization through effective coherency "snoop" bus traffic management on the processor buses. The 4X option is for applications that require the highest level of performance in combination with higher performing 2 MB L2 cache processor options.



## Netfinity 8500R Memory

Total System Memory <sup>1</sup>		Quantity of RDIMMs Added		
Standard Models				
256 MB (2 x 128)	512 MB (4 x 128)	128 MB (20L0245)	256 MB (20L0247)	512 MB (20L0249)
384	640	1	-	-
512	768	2 or	1	-
640	896	3	-	-
768	1024	4 or	2 or	1
896	1152	5	-	-
1024	1280	6 or	3	-
1152	1408	7	-	-
1280	1536	8 or	4 or	2
1408	1664	9	-	-
1536	1792	10 or	5	-
1664	1920	11	-	-
1792	2048	12 or	6 or	3
2304	2560	16 <sup>2</sup> or	8 or	4
2560	2816	18 <sup>2</sup> or	9	-
2816	3072	20 <sup>2</sup> or	10 or	5
3072	3328	22 <sup>2</sup> or	11	-
3328	3584	24 <sup>2</sup> or	12 or	6
4352	4608	-	16 <sup>2</sup> or	8
4864	5120	-	18 <sup>2</sup> or	9
5376	5632	-	20 <sup>2</sup> or	10
5888	6144	-	22 <sup>2</sup> or	11
6400	6656	-	24 <sup>2</sup> or	12
8448	8704	-	-	16 <sup>2</sup>
9472	9728	-	-	18 <sup>2</sup>
10496	10752	-	-	20 <sup>2</sup>
11520	11776	-	-	22 <sup>2</sup>
12544	12800	-	-	24 <sup>2</sup>
13568	13824	-	-	26 <sup>2</sup>
14592	14848	-	-	28 <sup>2</sup>
16384 (max)	16384 (max)	-	-	32 <sup>2, 3</sup>

This table does not represent all possible memory configurations.

NOTE: Cache line interleaving may be enabled by installing Netfinity 8500R Memory Expansion Card (P/N 28L4454) with as few as two RDIMMs. Matched pairs must be installed if the memory expansion card is present.

1. Network Operating Systems may limit the maximum amount of addressable memory. See the operating system specifications for further information.

2. Netfinity 8500R Memory Expansion Card (P/N 28L4454) is required for installation of greater than 16 RDIMMs.

3. Requires removal of standard memory.

Memory Card A- Std.		Memory Card B- Optional	
A1 Socket	Std. RDIMM	B1 Socket	
A2 Socket		B2 Socket	
A3 Socket		B3 Socket	
A4 Socket		B4 Socket	
A5 Socket	Std. RDIMM	B5 Socket	
A6 Socket		B6 Socket	
A7 Socket		B7 Socket	
A8 Socket		B8 Socket	
A9 Socket	Std. RDIMM	B9 Socket	
A10 Socket		B10 Socket	
A11 Socket		B11 Socket	
A12 Socket		B12 Socket	
A13 Socket	Std. RDIMM	B13 Socket	
A14 Socket		B14 Socket	
A15 Socket		B15 Socket	
A16 Socket		B16 Socket	
(J1-J16)		(J1-J16)	

Recommended order of RDIMM population for optimum cooling: 1, 5, 9, 13, 3, 7, 11, 15, 2, 6, 10, 14, 4, 8, 12, 16.

Part Number	Memory Description <sup>1</sup>
20L0245	Netfinity 128 MB SDRAM ECC RDIMM II
20L0247	Netfinity 256 MB SDRAM ECC RDIMM II
20L0249	Netfinity 512 MB SDRAM ECC RDIMM II
28L4454	Netfinity 8500R Memory Expansion Card <sup>2</sup>

1. Netfinity 8500R includes a single memory card with the ability to support up to 8 GB of memory. Model 8681-4RY contains two RDIMMs standard, other models contain four. For memory installation of greater than 8 GB, Netfinity 8500R Memory Expansion Card (P/N 28L4454) is required.

Installation of memory on systems containing a single memory card (standard on all models) has no restrictions on size or placement. When Netfinity 8500R Memory Expansion Card (P/N 28L4454) is installed, the memory RDIMM in each socket of Card A must match the RDIMM in the same socket on Card B. To enable cache line interleaving, both memory cards must be installed and configured identically.

2. Required for enablement of cache line interleaving or installation of greater than 16 RDIMMs. Configuration of the standard memory card (Card A) and optional 28L4454 (Card B) must be identical.



## Netfinity 8500R Hard Disk Drive (HDD) Storage

Total Internal Storage <sup>1</sup>	7200 RPM Hard Disk Drives (HDDs)			10,000 RPM HDDs		
	9.1 GB	18.2 GB	36.4 GB	9.1 GB	18.2 GB	36.4 GB
0 GB	Standard on Base Models			Standard on Base Models		
9.1 GB	1 x 36L9744	-	-	1 x 36L9748	-	-
18.2 GB	2 x 36L9744 or	1 x 36L9745	-	2 x 36L9748	1 x 36L9749	-
36.4 GB	-	2 x 36L9745 or	1 x 36L9746	-	2 x 36L9749 or	1 x 36L9750
72.8 GB (max)	-	-	2 x 36L9746	-	-	2 x 36L9750

This table does not represent all possible hard drive configurations.

1. Total Internal Storage listed is within  $\pm 0.2$  GB unless otherwise noted.

Bay	Form Factor	Height	Front Access	Usage	Part Number	Description	RPM	Height	Bays Supported	Max Qty.	
-	5.25"	HH	Yes	IDE CD-ROM	Internal Hard Disk Drives (HDD)						
-	3.5"	SL	Yes	Diskette	36L9744	Netfinity 9.1 GB Wide Ultra2 SCSI Hot-Swap SL HDD	7200	SL	1, 2	2	
1..2	HS	HH	Yes	Open	36L9745	Netfinity 18.2 GB Wide Ultra2 SCSI SL HDD	7200	SL	1, 2	2	
NB3E <sup>1</sup>	19" Rack	3U	Yes	Open	36L9746	Netfinity 36.4 GB Wide Ultra2 SCSI Hot-Swap HDD	7200	HH	1, 2	2	
1. A total of three optional 3U NetBAY3Es can be stacked beneath a Netfinity 8500R which has Netfinity 8Ux28D Rack-to-Tower Kit (P/N 28L4705) installed. See IBM Netfinity NetBAY3x Stackable Enclosure section for supported devices.						36L9748	Netfinity 9.1 GB 10K-3 Wide Ultra2 SCSI Hot-Swap SL HDD	10000	SL	1, 2	2
						36L9749	Netfinity 18.2 GB 10K-3 Wide Ultra2 SCSI Hot-Swap SL HDD	10000	SL	1, 2	2
						36L9750	Netfinity 36.4 GB 10K-3 Wide Ultra2 SCSI Hot-Swap HDD	10000	HH	1, 2	2
						External Storage Expansion Units <sup>1</sup>		Form Factor			
35202RU	Netfinity EXP15 Storage Expansion Unit	Rack (3U)									
35301RU	Netfinity EXP200 Storage Expansion Unit	Rack (3U)									
37L5857	Netfinity EXP200 Rack-to-Tower Conversion Kit	Tower									

CD-ROM

Hot-Swap (HS)

Diskette

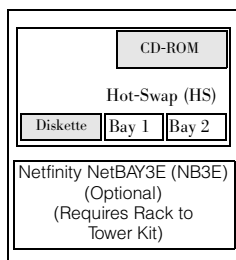
Bay 1

Bay 2

Netfinity NetBAY3E (NB3E) (Optional) (Requires Rack to Tower Kit)

1. Not supported by the onboard external SCSI port. Select an optional SCSI controller then refer to Appendix D: Cables-Storage Units-Controllers to confirm that the controller supports the desired External Storage Expansion Unit and to select a supported cable. For HDD or other expansion unit options, see the specific expansion unit section.

1. A total of three optional 3U NetBAY3Es can be stacked beneath a Netfinity 8500R which has Netfinity 8Ux28D Rack-to-Tower Kit (P/N 28L4705) installed. See IBM Netfinity NetBAY3x Stackable Enclosure section for supported devices.



1. Not supported by the onboard external SCSI port. Select an optional SCSI controller then refer to Appendix D: Cables-Storage Units-Controllers to confirm that the controller supports the desired External Storage Expansion Unit and to select a supported cable. For HDD or other expansion unit options, see the specific expansion unit section.

### Internal SCSI Cabling

Netfinity 8500R systems contains an LVDS backplane supporting two hot-swap drive bays that support installation of up to two 3.5-inch, slim-high or half-high HDDs. The backplane is connected to the internal Wide Ultra2 SCSI controller through a 16-bit LVD SCSI cable. RAID support for the internal hot-swap drive bays is provided by adding a supported RAID adapter and moving the standard SCSI cable from the onboard controller to the optional RAID controller. The standard external Wide Ultra2 SCSI port uses a 0.8-mm Very High Density Connector Interface (VHDCI).





### Netfinity 8500R I/O Options

Part Number	Description	Adapter Length	PCI Support	Slots Supported <sup>1</sup>	Hot-Plug <sup>2</sup>	PCI Voltage Key	MHz
<b>Storage Controllers<sup>3</sup></b>							
01K7364	Netfinity ServeRAID-3L Ultra2 SCSI Adapter <sup>4, 5</sup>	Full	32-bit	(1..5, 10..12) <sup>7</sup>	X	5	
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter <sup>6</sup>	Full	32/64-bit	(1..5, 10..12) <sup>7</sup>	X	5	33
02K3454	PCI Fast/Wide Ultra SCSI Adapter	Half	32-bit	1..5, 10..12	-	5	33
01K7297	Netfinity Fibre Channel PCI Adapter <sup>8</sup>	Half	32/64-bit	1..5, 10..12	-	5	33
09L2123	Advanced SerialRAID/X Adapter	Full	32-bit	1..12 <sup>9</sup>	-	Universal	33
<b>Networking<sup>10</sup></b>							
<b>Ethernet</b>							
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2	Half	32-bit	1..12	X	Universal	33
08L3341	Netfinity 10/100 Fault Tolerant Adapter	Half	32-bit	1..5, 10..12	X	5	33
34L0301	Netfinity Gigabit Ethernet SX Adapter	Half	32/64-bit	1..12	X	Universal	33
<b>Token Ring</b>							
34L0501	Token-Ring 100/16/4 High-Speed PCI Adapter	Half	32-bit	1..12	-	Universal	33
34L0601	Token-Ring 16/4 PCI Adapter 2	Half	32-bit	1..5, 10..12	X	5 <sup>11</sup>	33
<b>Communications<sup>12</sup></b>							
33L4618	PCI V90 56 Data/Fax Modem <sup>13</sup>	Half	32-bit	1..5, 10..12	-	5	33
37L1414	Serial I/O SST8P DB Adapter <sup>14</sup>	Half	32-bit	(1..5, 10..12) <sup>14</sup>	-	5	33
37L1415	Serial I/O SST16P RJ Adapter <sup>14</sup>	Half	32-bit	(1..5, 10..12) <sup>14</sup>	-	5	33
37L1423	Serial I/O SST16P DB Adapter <sup>14</sup>	Half	32-bit	(1..5, 10..12) <sup>14</sup>	-	5	33
37L1416	Serial I/O SST128P Expandable Adapter <sup>14</sup>	Half	32-bit	(1..5, 10..12) <sup>14</sup>	-	5	33
<b>Systems Management<sup>15</sup></b>							
03K9309	Netfinity Advanced Systems Management Interconnect Cable Kit <sup>16</sup>	-	-	-	-	-	-
36L9654	Netfinity Advanced System Management Token-Ring Connection <sup>17</sup>	-	-	-	-	-	-
02K6545	UltraSlim 56 W AC Adapter <sup>18</sup>	-	-	-	-	-	-
<b>Host Attach</b>							
9086001	Netfinity ESCON Adapter <sup>19</sup>	Full	32-bit	(1..5, 10..12) <sup>20</sup>	-	5	33

1. The P-6 I/O bus supports four independent 64-bit PCI buses, two of which drive eight 33 MHz, 5.0 V slots (1-5, 10-12), while the other two buses drive four 66 MHz, 3.3 V slots (6-9). The 5 V slots support Universal or 5 V adapters. A 66 MHz adapter plugged into these slots will operate at 33 MHz. The 3.3 V slots support Universal or 3.3 V adapters. A 33 MHz adapter plugged into these slots limits a 66 MHz PCI adapter installed on the same bus to 33 MHz.
2. All 12 Slots are hot-plug capable using IBM's Active PCI technology. For Network Operating System support access URL [www.ibm.com/pc/us/compat](http://www.ibm.com/pc/us/compat).
3. Netfinity 8500R includes a dual-port, dual-channel, 64-bit Wide Ultra2 SCSI controller which supports either Single Ended (SE) or Low Voltage Differential SCSI (LVDS) modes. One internal connector and one external port with a 0.8-mm Very High Density Connection Interface (VHDCI) are standard. The internal LVDS SCSI cable has sufficient length to attach to an adapter located in slots 10..12. If a boot device (internal or external) is to be attached to an adapter, the adapter must reside in slots 10..12 due to BIOS scanning sequences.
4. All ServeRAID-3x adapters can be upgraded with the same enhanced software utilities and firmware included with ServeRAID-3HB. The download is available for no charge from [www.ibm.com/support](http://www.ibm.com/support). Select "Server" in Family pull-down, "ServeRAID" in Family pull-down and then "Downloadable files". The upgrade should be considered for installations with firmware less than Version 3.5.
5. Netfinity ServeRAID-3L Ultra2 SCSI Adapter (P/N 01K7364) provides either one internal or one external (0.8-mm VHDCI) LVDS SCSI channel.
6. Netfinity ServeRAID-3HB Ultra2 SCSI Adapter (P/N 37L6086) provides one internal and two external (0.8 mm VHDCI) LVDS SCSI channels. The internal channel can be configured for external usage (0.8 mm VHDCI) providing a total of three external LVDS SCSI channels. Includes 32 MB of mirrored battery-backup cache, which helps protect against data loss in write-back cache mode in the event of a power outage or adapter maintenance.
7. A total quantity of eight, in any combination of 01K7363, 37L6086, and 01K7207 is supported.
8. See Netfinity Fibre Channel Solutions section for additional configuration information.
9. A maximum quantity of four is supported.
10. Netfinity 8500R does not include an onboard network controller.
11. Early versions of Token-Ring 16/4 PCI Adapter 2 (P/N 34L0601) were keyed as Universal; current versions are keyed for 5 V. All versions are supported in 5 V PCI slots only.
12. Netfinity 8500R includes two USB ports, two high-speed serial/asynchronous ports, (NS 16550A compatible), and one high-speed (up to 2 MBps data transfer speed) bi-directional parallel port supporting devices using ECP/EPP/SSP protocols adhering to the IEEE 1284 standard.
13. Due to homologation variances, modem availability may differ by country.
14. See Appendix E for details on Serial I/O options and configuration limitations. A maximum of four Serial I/O adapters (any combination of P/N 37L1414, 37L1415, 37L1416, 37L1423) may be installed.
15. Netfinity 8500R ships standard with a Netfinity Advanced System Management PCI Adapter.
16. Required for all Netfinity Servers containing a standard Advanced System Management Processor that are to be interconnected for system management support through a LAN or modem connection (Netfinity 5500 models 8660-1..4xU are not supported). Up to 12 service processors may be interconnected (including standard and optional processors) with an aggregate connection length of no more than 914 meters (300 ft). A customer-supplied Ethernet cable is required for each interconnection.
17. Contains an IBM Turbo 16/4 Token-Ring PCI Card, which installs in the PCMCIA card slot of Netfinity Advanced System Management PCI Adapter and a PC Card to 9-pin D-Shell cable which is routed to a rear chassis cut-out. The Netfinity Advanced System Management PCI Adapter's integrated Ethernet port and Netfinity Advanced System Management Token-Ring Connection cannot be connected or used together. To download the latest firmware, access URL [www.ibm.com/pc/us/netfinity](http://www.ibm.com/pc/us/netfinity). Select "Server Support", "Family", "Model", "Downloadable Files" and finally "Advanced System Management".
18. Although the 8500R integrated Netfinity System Management PCI Adapter is powered continuously through the redundant power supply subsystem, an even higher level of availability is offered with the addition of UltraSlim 56 W AC Adapter by allowing an independent power source or connection to a separate optional UPS.
19. Provides an ESCON MIC and DB9 Serial Port. Cables are not included but are available through S/390 channels. Contact your IBM representative for additional information.
20. A maximum of two 9086001 adapters (installed in non-adjacent slots) are supported in a single Netfinity server.



Full Length, 64-bit, Hot-Plug PCI Slots											
Slot 1- Bus D- 33 MHz- 5 V or Universal	Slot 2- Bus D- 33 MHz- 5 V or Universal	Slot 3- Bus D- 33 MHz- 5 V or Universal	Slot 4- Bus D- 33 MHz- 5 V or Universal	Slot 5- Bus D- 33 MHz- 5 V or Universal	Slot 6- Bus C- 66 MHz- 3.3 V or Universal	Slot 7- Bus C- 66 MHz- 3.3 V or Universal	Slot 8- Bus B- 66 MHz- 3.3 V or Universal	Slot 9- Bus B- 66 MHz- 3.3 V or Universal	Slot 10- Bus A- 33 MHz- 5 V or Universal	Slot 11- Bus A- 33 MHz- 5 V or Universal	Slot 12- Bus A- 33 MHz- 5 V or Universal

## Netfinity 8500R Power, Monitor & Accessories

Part Number	Description
<b>Power<sup>1</sup></b>	
<b>Uninterruptible Power Supply (UPS)<sup>2</sup></b>	
94G6676	APC Smart-UPS 3000RMB (16 min. runtime at 1015 Watts) <sup>3</sup>
<b>Monitors<sup>4</sup></b>	
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black <sup>5</sup>
65474AN	G74 Color Monitor 17" (15.9 Viewable Image Size), stealth black <sup>5</sup>
65494AN	G96 Color Monitor 19" (17.9" Viewable Image Size), stealth black <sup>5</sup>
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black <sup>7</sup>

1. Netfinity 8500R systems contain three 750 W (at 220 V), hot-swap power supplies which handle robust configurations while providing full redundancy. When operating at 110 V, redundancy is limited to configurations not exceeding six processors, 24 memory RDIMMs, or eight PCI adapters. Each system ships with 9 power cords: 3 x 220 V, 3 x 110 V, 3 x intra-rack 220 V. Even though multiple UPSs may provide redundant power sources, systems management software does not currently take advantage of its power outage alerts.
2. Stated runtimes and power are for typical configurations (approximately 70% of maximum capacity). For additional information see Appendix C: UPS Runtime Estimate.
3. Height is 3U. See "Rack and NetBAY" for supported IBM racks.
4. Netfinity 8500R uses an SVGA controller (S3 Trio 3D chipset) with 4 MB of video memory.
5. Installation within a rack requires optional Monitor Compartment (P/N 94G7444).
6. Not supported for installation in a 19" rack.
7. Installation within a rack requires optional Netfinity Flat Panel Monitor Rack Mount Kit (P/N 37L6857) and Netfinity Rack Keyboard Tray (P/N 28L4707). A space saver keyboard may coexist within the same 28L4707 keyboard tray.

Part Number	Description
<b>Conversion Kits</b>	
28L4705	Netfinity 8Ux28D Rack-to-Tower Kit <sup>1</sup>
<b>Rack and NetBAY<sup>2</sup></b>	
930842P	Netfinity Enterprise Rack
930842X	Netfinity Enterprise Expansion Cabinet
9306900	Netfinity Rack <sup>3</sup>
36L9703	Netfinity Rack Extension Kit
9306200	Netfinity NetBAY22 <sup>4</sup>
36L9702	NetBAY22 Rack Extension Kit
36L9701	Netfinity NetBAY3E <sup>5</sup>
<b>Keyboard and Mouse<sup>6</sup></b>	
28L3644	Space Saver II Keyboard <sup>4, 8</sup>
01K1260	TrackPoint IV 104-Key Black Keyboard <sup>8, 9</sup>
28L3621	Preferred Keyboard (stealth black) <sup>9</sup>
28L3673	Sleek 2-Button Stealth Black Mouse

1. Includes casters, which can also be used with NetBAY3E.
2. Netfinity 8500R is housed in a 19" rack mountable drawer and requires one of the racks listed here. See "IBM Netfinity Rack Cabinet and Options" section for IBM rack supported devices.
3. Netfinity Rack Extension Kit (P/N 36L9702) is required for proper rear door closure clearance.
4. NetBAY22 Rack Extension Kit (P/N 36L9703) is required for proper rear door closure clearance.
5. A maximum of three NetBAY3E enclosures may be stacked beneath a supported Netfinity tower server (conversion kit 28L4705 required). See IBM Netfinity NetBAY3X Stackable Enclosure section for supported devices.
6. Netfinity 8500R ships without a keyboard or mouse.
7. Installation within a rack requires optional keyboard tray P/N 28L4707 (stows in "ready-to-use" position).
8. Advanced TrackPoint IV features are not available on IBM Netfinity systems.
9. Installation within a rack requires optional keyboard tray P/N 28L4707. This keyboard cannot share a keyboard tray with a flat panel display.



### Netfinity 8500R Tape Options

Part Number	Description	Bays Supported	SCSI Interface (bit)	Form Factor	Termination Included	68/50-pin Converter Incl.	Ext. Tape Encl. <sup>1</sup>
01K1325	20/40 GB 8-mm Internal SCSI Tape Drive	N/A <sup>2</sup>	16	5.25"HH	N	N	3510020 <sup>4</sup> , 3551001
01K1320	20/40 GB DLT Internal SCSI Tape Drive	N/A <sup>2</sup>	8	5.25"FH	Y <sup>3</sup>	Y	3503BOX, 3551001
04K0149	35/70 GB DLT Internal SCSI Tape Drive	N/A <sup>2</sup>	16	5.25"FH	N	N	3503BOX <sup>4</sup> , 3551001
00N7990	40/80 GB DLT Internal SCSI Tape Drive	N/A <sup>2</sup>	16 LVD	5.25" FH <sup>1</sup>	N	N	3503BOX <sup>4</sup> , 3551001
<b>Associated Options</b>							
32G3918	SCSI-2 16-bit Active Terminator	-	16	External	Y	N	3510020, 3503BOX
<b>External Tape Enclosures</b>							
3510020	External Half High SCSI Storage Enclosure <sup>5</sup>	-	8/16	Desktop	N	N	-
3551001	NetMEDIA Storage Expansion Unit EL <sup>6</sup>	-	16	Rack	Y	N	-
10L7113	NetMEDIA Systems Management Adapter <sup>7</sup>	-	16	-	N	N	3551001
3503BOX	DLT External SCSI Enclosure <sup>5</sup>	-	16	Desktop	N	N	-
<b>External Tape Libraries<sup>9</sup></b>							
3502108	DLT Tape Autoloader	-	16	Desktop	Y	-	-
3502x14	DLT Tape Library	-	16	Desktop or Rack	Y	-	-
3503108	DLT8000 Tape Autoloader	-	16 LVD	Desktop	Y	-	-
3503x14	DLT8000 Tape Library	-	16 LVD	Desktop or Rack	Y	-	-
3570xxx	Magstar MP 3570 Tape Subsystem (models B2x and C2x)	-	Differential	Desktop or Rack	Y	-	-

1. To determine cable requirements, note the tape drive's SCSI interface, the appropriate SCSI controller from the system configurator section and the desired enclosure, then refer to Appendix D: Cables - Storage Units - Controllers.

2. Netfinity 8500R supports tape drives installed in external enclosures only. See External Tape Enclosure column.

3. Tape drive is capable of self termination.

Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either tape drive self-termination or SCSI-2 16-bit Active Terminator (P/N 32G3918).

4. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).

5. Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either tape drive self termination or SCSI-2 16-bit Active Terminator (P/N 32G3918).

6. Provides a black 3U, 19" rack or NetBAY3 mountable tape enclosure. Provides two full high (FH) or four half high (HH) extended length 5.25" bays. External connector is 0.8mm VHDCL. Includes two power supplies and two power cords.

7. Installs in 3551001. Provides repeater function and LVDS interface allowing longer cable lengths and auto-termination when the 3551001 is powered off.

8. Provides a black desktop DLT tape enclosure with a 68-pin high density external connector. Requires termination by the tape drive or by installation of a SCSI-2 16-bit Active Terminator (P/N 32G3918).

9. Tape library attributes and prerequisites are located in Appendix B: Tape Library Attributes.

NOTE: SCSI support for tape drives is provided by system unit onboard (standard) controller (no-RAID function) or PCI Fast Wide Ultra SCSI Adapter P/N 02K3454. Additional tape attributes can be found in Appendix A: Tape Drive Attributes.



### Sample Configurations

The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

#### High Availability-Rack

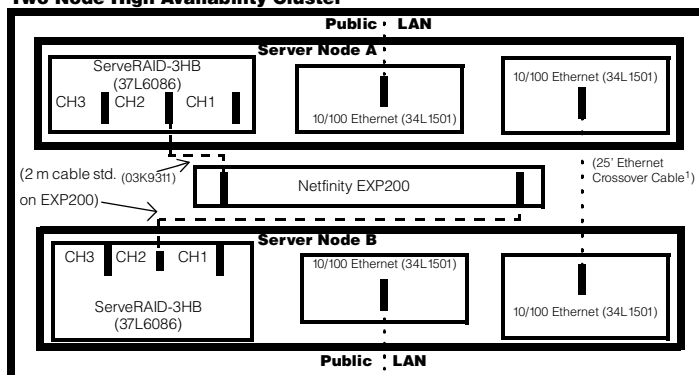
Part Number	Description	Quantity	Usage
8681-4RY	Netfinity 8500R (PIII Xeon 550/512 KB 256 MB/Rack)	1	Power Redundancy standard
33L5103	Netfinity 8500R 550 MHz/512 KB Upgrade with Pentium III Xeon Processor	5	Total of 6 SMP processors
28L4730	Netfinity 8500R>4-Way Enablement Kit (1X SRAM)	1	Required for greater than 4 processors
20L0247	Netfinity 256 MB SDRAM ECC RDIMM II	8	Total of over 2 GB of memory
28L4454	Netfinity 8500R Memory Expansion Card	1	Enables cache line interleaving
36L9744	Netfinity 91 GB Wide Ultra2 SCSI Hot-Swap SL HDD	2	NOS mirroring
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter	1	RAID Controller - NOS plus EXP200
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2	1	-
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	-
28L3644	Space Saver II Keyboard	1	-
94G6676	APC Smart-UPS 3000RMB	1	-
<b>External Storage</b>			
3551001	NetMEDIA Storage Expansion Unit EL	1	External Tape Drive Enclosure
00N7990	40/80 GB DLT Internal SCSI Tape Drive	2	Installs in 3551001
35301RU	Netfinity EXP200 Storage Expansion Unit	1	Provides additional 10 bays
37L0075	Netfinity EXP200 350 W Redundant Power Supply	1	-
03K9311	Netfinity 4.2 M Ultra2 SCSI Cable	2	Tape to Onboard SCSI, 3-HB to EXP200
36L9748	Netfinity 91 GB 10K-3 Wide Ultra2 SCSI Hot-Swap SL HDD	6	RAID 5 with Hot-Spare in EXP200
<b>Rack Options</b>			
9306200	Netfinity NetBAY22	1	Monitor and keyboard mount on top
36L9702	NetBAY22 Rack Extension Kit	1	Required for rear door closure
94G6667	Power Cable - Type A14 (4)	5	-
94G6670	Blank Filler Panel Kit	1	-

This high availability server is configured to act as the foundation for business critical applications, applications your business cannot afford to be without. The configuration includes enough disk drives to mirror the operating system and provide a RAID 5 data environment, power supply redundancy by the server and EXP200 and a UPS for power even during a blackout. A rack mounted tape drive is included to back up that all important asset...data. This server represents the leading edge in high availability.

#### Notes/Exchange-Stack

Part Number	Description	Quantity	Usage
8681-5RY	Netfinity 8500R (PIII Xeon 550/1 MB 512 MB/Rack)	1	Power redundancy standard
33L5104	Netfinity 8500R 550 MHz/1 MB Upgrade with Pentium III Xeon Processor	5	Total of 6 SMP processors
28L4727	Netfinity 8500R>4-Way Enablement Kit (4X SRAM)	1	Required for greater than 4 processors
20L0249	Netfinity 512 MB SDRAM ECC RDIMM II	3	Total of 2 GB of memory
28L4454	Netfinity 8500R Memory Expansion Card	1	Enables cache line interleaving
36L9744	Netfinity 91 GB Wide Ultra2 SCSI Hot-Swap SL HDD	2	NOS Mirroring
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2	1	-
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter	1	NOS plus EXP200
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	-
28L3644	Space Saver II Keyboard	1	-
94G6676	APC Smart-UPS 3000RMB	1	-
<b>External Storage</b>			
3551001	NetMEDIA Storage Expansion Unit EL	1	External Tape Enclosure - Install in NetBAY3E
00N7990	40/80 GB DLT Internal SCSI Tape Drive	2	Installs in 3551001
03K9310	Netfinity 2M Ultra2 SCSI Cable	1	Tape to Onboard SCSI
35301RU	Netfinity EXP200 Storage Expansion Unit	1	Provides additional 10 Bays, 1 x 2M cable
37L0075	Netfinity EXP200 350 W Redundant Power Supply	1	-
36L9749	Netfinity 18.2 GB 10K-3 Wide Ultra2 SCSI Hot-Swap SL HDD	10	RAID 5 with Hot-Spare in EXP200
<b>Stack Options</b>			
28L4705	Netfinity 8Ux28D Rack-to-Tower Kit	1	-
36L9701	Netfinity NetBAY3E	3	3 x 3U enclosure for UPS, EXP200, Tape

### Two Node High Availability Cluster



1. Customer supplied Ethernet Crossover Cable may vary in length up to a maximum of 25' (76 m).

### Two Node High Availability Cluster

Part Number	Description	Quantity	Usage
<b>Server Nodes A &amp; B</b>			
8681-6RY	Netfinity 8500R (PIII Xeon 550/2 MB 512 MB/Rack) (8U)	2	Power redundancy standard
33L5105	Netfinity 8500R 550 MHz/2 MB Upgrade with Pentium III Xeon Processor	10	Total of 6 SMP processors per node
28L4727	Netfinity 8500R>4-Way Enablement Kit (4X SRAM)	2	Required for greater than 4 processors
20L0247	Netfinity 256 MB SDRAM ECC RDIMM II	16	Total of over 2 GB of memory per node
28L4454	Netfinity 8500R Memory Expansion Card	2	Enables cache line interleaving
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2¹	4	1 for crossover, 1 for public LAN/node
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter²	2	RAID controller - NOS plus EXP200
36L9744	Netfinity 91 GB Wide Ultra2 SCSI Hot-Swap SL HDD	4	NOS mirroring
94G6676	APC Smart-UPS 3000RMB (3U)	2	-
<b>External Storage</b>			
3551001	NetMEDIA Storage Expansion Unit EL (3U)	1	External Tape Drive Enclosure
03K9311	Netfinity 4.2 M Ultra2 SCSI Cable³	1	3551001 to onboard SCSI
00N7990	40/80 GB DLT Internal SCSI Tape Drive	1	Installs in 3551001
35301RU	Netfinity EXP200 Storage Expansion Unit (3U)²	1	Provides additional 10 bays
37L0075	Netfinity EXP200 350 W Redundant Power Supply²	1	-
03K9311	Netfinity 4.2 M Ultra2 SCSI Cable², ³	2	3-HB to EXP200
36L9748	Netfinity 91 GB 10K-3 Wide Ultra2 SCSI Hot-Swap SL HDD	10	RAID 5 shared storage in EXP200
<b>Shared (or single occurrence) Resources</b>			
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black	1	Mounts in keyboard tray
28L3644	Space Saver II Keyboard	1	-
<b>Rack Options</b>			
930842P	Netfinity Enterprise Rack	1	-
37L6857	Netfinity Flat Panel Monitor Rack-Mount Kit (3U)	1	Mounts in keyboard tray
28L4707	Netfinity Rack Keyboard Tray	1	-
28L0542	Netfinity Console Server Selector Switch (4-port)	1	-
94G6667	Power Cable-Type A14³	4	-
94G7447	12 ft. Console Cable Set	2	-
94G6670	Blank Filler Panel Kit	1	-

1. Requires customer supplied Ethernet Crossover Cable which may vary in length up to a maximum of 25' (76 m).

2. By replicating these items, up to a total quantity of four ServeRAID-3HB Adapters (plus options) and eleven EXP200s can provide over 2 Terabytes of storage. Additional power and rack space will be required.

3. Cable length requirements are dependent on component placement within the rack or rack suite. To determine specific configuration requirements use the Netfinity Rack Configurator.

Clustering is a group of interconnected computers used as a single, unified computing resource. Clustering Netfinity servers, like the IBM Netfinity 8500R, provides a high availability solution to keep you in touch with the key applications you need to run your business.

This sample configuration consists of paired IBM Netfinity 8500R cluster nodes equipped with eight-way SMP capability and redundant power supplies. Microsoft Cluster Service (MSCS) has been validated on IBM Netfinity 8500R servers, using the Netfinity ServeRAID-3HB with the EXP200 Storage Expansion Unit. MSCS allows two configured servers, referred to as nodes, to be connected together to form a cluster. Providing system redundancy means that a complete server can fail and client access to server resources is largely unaffected. MSCS extends this theme by also allowing for software failures at an application level as well as an operating system level. If the operating system fails, all applications and services can be restarted on another server, and if just one application fails, it can be managed by MSCS individually. An additional independent network connection is used to perform monitoring within the cluster. One or more disk subsystems are attached to both nodes. In the above example, a Netfinity EXP200 was selected and the Netfinity ServeRAID-3HB Ultra2 SCSI Adapters provide the I/O control. Netfinity ServeRAID-3HB handles the "SCSI heartbeat" connection without the need for a dedicated SCSI connection and logically attaches the quorum disk, which allows arbitration when a failure occurs. Additional information on IBM Netfinity and IBM PC Server Clustering Solutions may be found on the World Wide Web by accessing URL [www.ibm.com/pc/us/netfinity/clustering.html](http://www.ibm.com/pc/us/netfinity/clustering.html).



# IBM External Storage Expansion Unit Overview

Part Number	Withdrawal Date (mmddyy) <sup>1</sup>	Subsystem Type	Total Bays	Hot-Swap Bays: total, available	Maximum Internal Storage Capacity(GB)	Dimensions (in.) (W x D x H)	Form Factor	Max. Cfg. Wt. (lb)	Power Supply
35202RU Netfinity EXP15	-	Ultra SCSI <sup>2</sup> LVDS	10	10, 10	364	176 x 22.5 x 5.1	Rack Drawer (3U)	92	Redundant 350 Watts
35301RU Netfinity EXP200	-	Ultra2 SCSI LVDS	10	10, 10	364	176 x 22.5 x 5.1	Rack Drawer (3U) <sup>3</sup>	79	350 Watts <sup>4</sup>

To attach a Storage Enclosure to an IBM Netfinity or PC Server, the following is required:  
Attachment to an appropriate PC Server SCSI or SSA controller.

External Cable(s) - See Appendix D: Cables - Storage Units - Controllers.

1. Not available from IBM after this date. Business Partner inventory may be available.

2. See IBM Netfinity EXP15 Configurator Limitations section for additional information.

3. A rack-to-tower conversion kit option is available.

4. A redundant power supply is available.





# IBM Netfinity EXP15 (3520-2RU) Configurator

## Netfinity EXP15 Hard Disk Drive (HDD) Storage

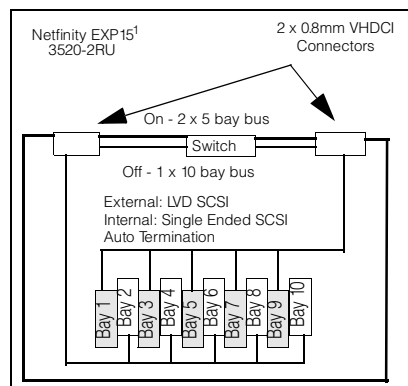
Total Internal Storage <sup>1</sup>	7,200 RPM Hard Disk Drives (HDDs)			10,000 RPM Hard Disk Drives (HDDs)		
	9.1 GB	18.2 GB	36.4 GB	9.1 GB	18.2 GB	36.4 GB
0 GB	Standard on all Base Models			Standard on all Base Models		
18.2 GB	2 x 01K7959 or	1 x 01K8501	-	2 x 36L9809 or	1 x 36L9810	-
36.2 GB	4 x 01K7959 or	2 x 01K8501 or	1 x 02K0442	4 x 36L9809 or	2 x 36L9810 or	1 x 36L9811
54.6 GB	6 x 01K7959 or	3 x 01K8501	-	6 x 36L9809 or	3 x 36L9810	-
72.8 GB	8 x 01K7959 or	4 x 01K8501 or	2 x 02K0442	8 x 36L9809 or	4 x 36L9810 or	2 x 36L9811
91.0 GB	10 x 01K7959 or	5 x 01K8501	-	10 x 36L9809 or	5 x 36L9810	-
109.2 GB	-	6 x 01K8501 or	3 x 02K0442	-	6 x 36L9810 or	3 x 36L9811
145.6 GB	-	8 x 01K8501 or	4 x 02K0442	-	8 x 36L9810 or	4 x 36L9811
182.0 GB	-	10 x 01K8501 or	5 x 02K0442	-	10 x 36L9810 or	5 x 36L9811
218.4 GB	-	-	6 x 02K0442	-	-	6 x 36L9811
254.8 GB	-	-	7 x 02K0442	-	-	7 x 36L9811
291.2 GB	-	-	8 x 02K0442	-	-	8 x 36L9811
327.6 GB	-	-	9 x 02K0442	-	-	9 x 36L9811
364 (max)	-	-	10 x 02K0442	-	-	10 x 36L9811

This table does not represent all valid hard drive configurations.

1. Total Internal Storage listed is within +/- 0.2 GB unless otherwise noted.

Bay	Form Factor	Height	Front Access	Usage	BUS
Odd #s	HS	HH	yes	open	1
Even #s	HS	HH	yes	open	2

Part Number	Description	RPM	Height	Bays Supported	Max. Qty Supported
01K7959	Netfinity EXP10 9.1 GB Wide Ultra SCSI SCA-2 HDD	7200	HH	All	10
01K8501	Netfinity EXP10 18.2 GB Wide Ultra SCSI SCA-2 HDD	7200	HH	All	10
02K0442	Netfinity EXP 36.4 GB Wide Ultra SCSI SCA-2 HDD	7200	HH	All	10
36L9809	Netfinity EXP 9.1 GB 10K-3 Wide Ultra SCSI Hot-Swap HDD	10,000	SL	All	10
36L9810	Netfinity EXP 18.2 GB 10K-3 Wide Ultra SCSI Hot-Swap HDD	10,000	SL	All	10
36L9811	Netfinity EXP 36.4 GB 10K-3 Wide Ultra SCSI Hot-Swap HDD	10,000	HH	All	10



1. Housed in a 19" rack mountable drawer and ships standard with redundant power supplies and two power cables requiring separate power sources.

Requires IBM Netfinity Enterprise Rack (930842P) or Expansion Cabinet (930842X), Rack (9306900), NetBAY22 (9306200), NetBAY3 (10L6912) or NetBAY3E (36L9701.)

External Storage Expansion Units require storage controllers and external cables. Select a supported controller from the system configurator and cables from Appendix D: Cables-Storage Units-Controllers.

## Limitations

The Netfinity EXP15 is not supported when the SCSI channel of the SCSI adapter to which it is attached is split between internal devices and external devices. Each Netfinity EXP15 must be attached to a dedicated SCSI channel of a supported SCSI adapter. Ultra SCSI mode is not supported when external cables are greater than 2.0 meters in length unless attached to a supported Ultra-2 SCSI adapter (other restrictions may apply; see Appendix D). Netfinity EXP15 is supported as a rack drawer and is not supported for stacking directly on top of one another. Netfinity EXP15 can be installed in Netfinity NetBAY3 storage units stacked up to three units high with a supported server on top.



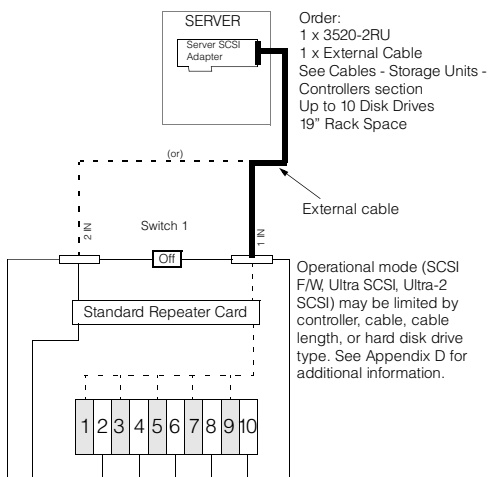
## Cables and Controllers: See Appendix D: Cables - Storage Units - Controllers

### Sample Configurations

The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

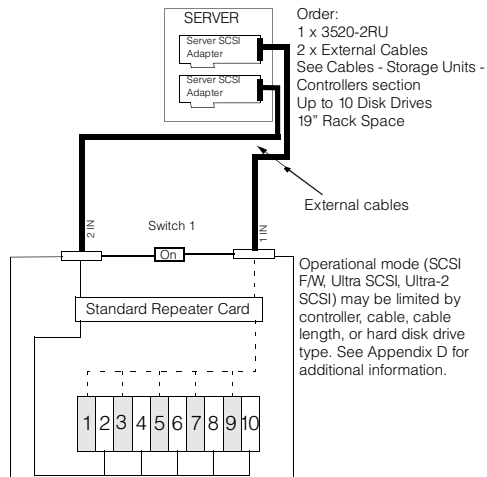
#### Netfinity EXP15 One Independent SCSI Bus

To configure as a single 10 drive SCSI channel, attach one external cable from the SCSI adapter to either the 1 IN or 2 IN connectors in the EXP15. Set switch 1 to "Off" position.



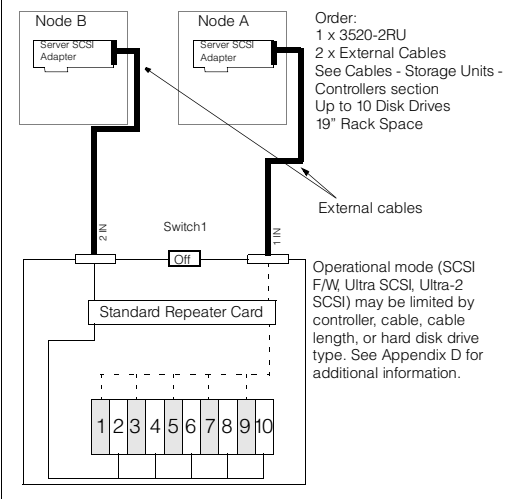
#### Netfinity EXP15 Two Independent SCSI Buses

To configure as two independent 5 drive SCSI channels, attach one external cable from the SCSI adapter to the SCSI bus 1 IN connector in the EXP15. Attach a second External SCSI cable from another SCSI adapter, in the same or separate server, to the 2 IN connector in the unit. Set switch 1 to "On" position.



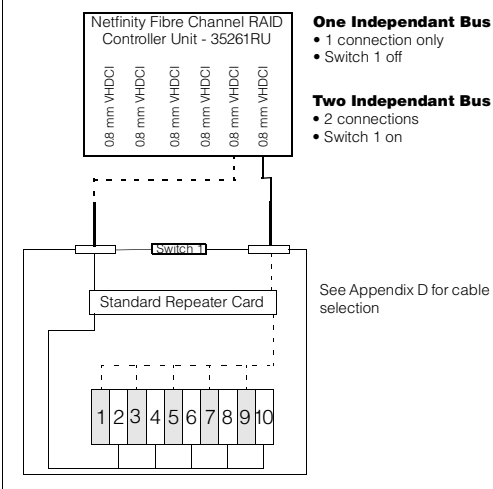
#### Netfinity EXP15 One Independent SCSI Bus High Availability Configuration

To configure a single 10 drive SCSI channel for clustering, attach one external cable from the SCSI adapter in Node A to the 1 IN connector in the EXP15. Connect a second external cable to a SCSI adapter in Node B and to the 2 IN connector in the EXP15.



#### Netfinity Fibre Channel Solutions Configuration

To configure the Netfinity EXP15 for either cluster or non-cluster applications using a 35261RU, follow the same attachments outline above. Utilizing Fibre Solutions provides support for large amounts of high-performance, RAID protected data storage at distances of up to 10 KM (6 miles) from the server.





# IBM Netfinity EXP200 (35301RU) Configurator

## Netfinity EXP200 Hard Disk Drive (HDD) Storage

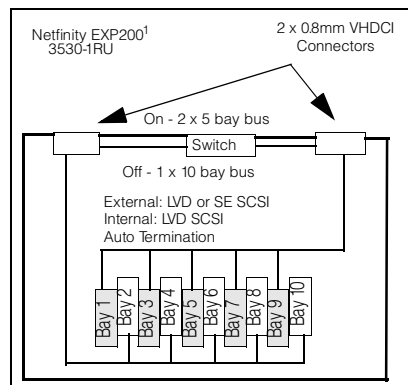
Total Internal Storage <sup>1</sup>	7,200 RPM Hard Disk Drives (HDDs)			10,000 RPM Hard Disk Drives (HDDs)		
	9.1 GB	18.2 GB	36.4 GB	9.1 GB	18.2 GB	36.4 GB
0 GB	Standard on all Base Models			Standard on all Base Models		
18.2 GB	2 x 36L9744 or	1 x 36L9745	-	2 x 36L9748 or	1 x 36L9749	-
36.2 GB	4 x 36L9744 or	2 x 36L9745 or	1 x 36L9746	4 x 36L9748 or	2 x 36L9749 or	1 x 36L9750
54.6 GB	6 x 36L9744 or	3 x 36L9745	-	6 x 36L9748 or	3 x 36L9749	-
72.8 GB	8 x 36L9744 or	4 x 36L9745 or	2 x 36L9746	8 x 36L9748 or	4 x 36L9749 or	2 x 36L9750
91.0 GB	10 x 36L9744 or	5 x 36L9745	-	10 x 36L9748 or	5 x 36L9749	-
109.2 GB	-	6 x 36L9745 or	3 x 36L9746	-	6 x 36L9749 or	3 x 36L9750
145.6 GB	-	8 x 36L9745 or	4 x 36L9746	-	8 x 36L9749 or	4 x 36L9750
182.0 GB	-	10 x 36L9745 or	5 x 36L9746	-	10 x 36L9749 or	5 x 36L9750
218.4 GB	-	-	6 x 36L9746	-	-	6 x 36L9750
254.8 GB	-	-	7 x 36L9746	-	-	7 x 36L9750
291.2 GB	-	-	8 x 36L9746	-	-	8 x 36L9750
327.6 GB	-	-	9 x 36L9746	-	-	9 x 36L9750
364 (max)	-	-	10 x 36L9746	-	-	10 x 36L9750

This table does not represent all valid hard drive configurations.

1. Total Internal Storage listed is within +/- 0.2 GB unless otherwise noted.

Bay	Form Factor	Height	Front Access	Usage	BUS	Part Number	Description	RPM	Height	Bays Supported	Max. Qty Supported
Odd #s	HS	HH	yes	open	1	36L9744	Netfinity 9.1 GB Wide Ultra2 SCSI Hot-Swap SL HDD	7200	SL	1..10	10
Even #s	HS	HH	yes	open	2	36L9745	Netfinity 18.2 GB Wide Ultra2 SCSI Hot-Swap SL HDD	7200	SL	1..10	10
						36L9746	Netfinity 36.4 GB Wide Ultra2 SCSI Hot-Swap HDD	7200	HH	1..10	10
						36L9748	Netfinity 9.1 GB 10K-3 Wide Ultra2 SCSI Hot-Swap SL HDD	10,000	SL	1..10	10
						36L9749	Netfinity 18.2 GB 10K-3 Wide Ultra2 SCSI Hot-Swap SL HDD	10,000	SL	1..10	10
						36L9750	Netfinity 36.4 GB 10K-3 Wide Ultra2 SCSI Hot-Swap HDD	10,000	HH	1..10	10
						37L5857	Netfinity EXP200 Rack-to-Tower Conversion Kit				
						37L0075	Netfinity EXP200 350 W Redundant Power Supply <sup>1</sup>				

1. The EXP200 includes a single hot-swap 350 W power supply and power cord. Optional hot-swap Netfinity EXP200 350 W Redundant Power Supply (P/N 37L0075) includes an additional power cord.



1. Housed in a 19" rack mountable drawer and ships standard with a single power supply, power cord and 2 meter Ultra2 SCSI cable. Requires IBM Netfinity Enterprise Rack (930842P) or Expansion Cabinet (930842X), Rack (9306900), NetBAY22 (9306200), NetBAY3 (10L6912) or NetBAY3E (36L9701). External Storage Expansion Units require storage controllers and external cables. Select a supported controller from the system configurator and cables from Appendix D: Cables - Storage Units - Controllers.

## Limitations

Netfinity EXP200 hot-swapping of HDDs is restricted to a HDD that is inactive or where a lighted fault LED is indicated. The EXP200 is not supported when the SCSI channel of the SCSI adapter to which it is attached is split between internal devices and external devices. Each EXP200 must be attached to a dedicated SCSI channel of a supported SCSI adapter. The standard EXP200 configuration is supported as a rack drawer and is not currently supported for stacking directly on one another. It can be installed in a Netfinity NetBAY3 or NetBAY3E storage unit and stacked up to three units high, with a supported server on top. In addition, it can be converted to a tower with the addition of a Netfinity EXP200 Rack-to-Tower Conversion Kit (37L5857). See Appendix D: Cables- Storage Units- Controllers for supported controllers and cables. A single two meter cable is included with the EXP200.

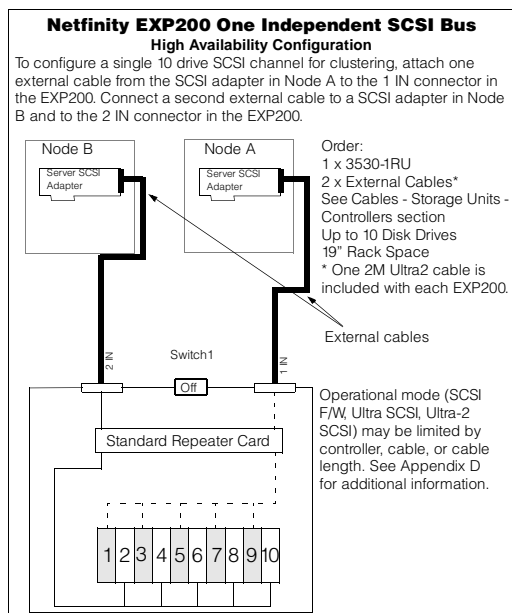
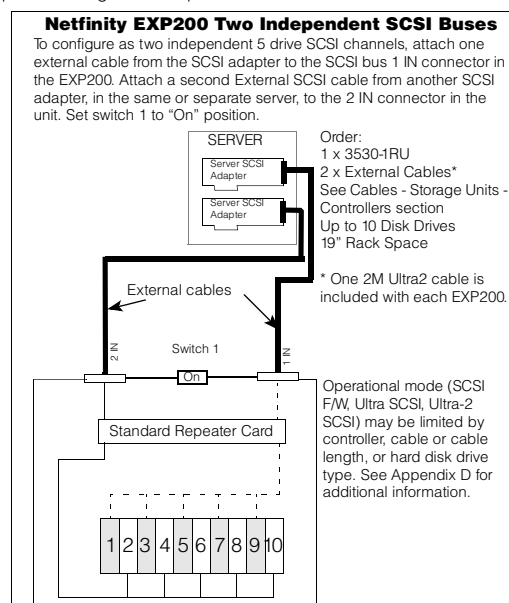
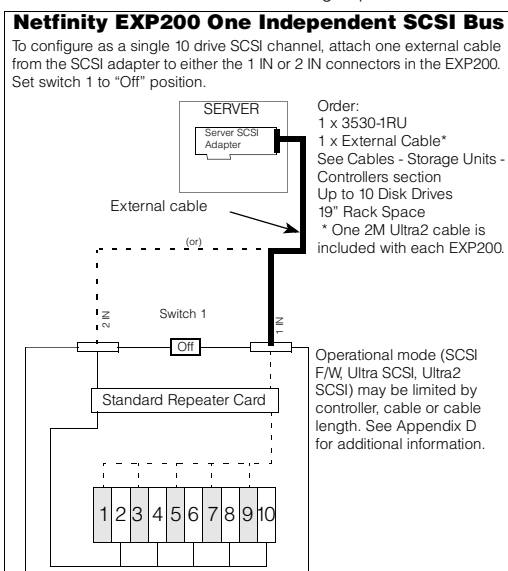
Cable Length (Meters) <sup>1</sup>	Maximum MB/s	
	Ultra2 Controller	Ultra Controller
1 and 2	80	40
3	80	20
4.3	80	20
12 and 20	80	N/A

1. The EXP200 ships with a single Ultra2 SCSI cable similar to Netfinity 2 M Ultra2 SCSI Cable (P/N 03K9310).

## Cables and Controllers: See Appendix D: Cables - Storage Units - Controllers

### Sample Configurations

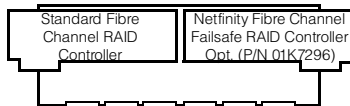
The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.





# IBM Netfinity Fibre Channel Solutions

## Netfinity Fibre Channel RAID Controller Unit 35261RU



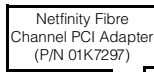
- Contains a single Short-Wave Fibre Connection (use cable group D) and six female 0.8 mm Very High Density Connection Interface (VHDCI) SCSI connectors (EXP15 - use cable group A)
- Hot-Swap Redundant Fans and Power Supplies
- Optional Netfinity Fibre Channel Failsafe RAID Controller (P/N 01K7296) provides a redundant RAID controller and second Short-Wave Fibre Connection (use cable group D).
- Attach directly to Netfinity Fibre Channel PCI Adapter(s) (P/N 01K7297) or indirectly through Netfinity Fibre Channel Hub (P/N 35231RU) using cables from cable group D
- Height is 4 U (1 U = 1.75 in or 44.45 mm)
- Requires Netfinity Enterprise Rack or Expansion Cabinet, Netfinity Rack, Netfinity NetBAY22 or 19-inch EIA-D Industry-Standard Rack. Mounting rails are included with the controller.
- For optimum performance no more than two RAID controller units (P/N 35261RU) should be attached to a single hub (P/N 35231RU).

## Netfinity Fibre Channel Hub 35231RU



- Seven-port Fibre Channel Hub chassis
- Includes four standard Netfinity Fibre Channel Short-Wave GBIC's (GigaBit Interface Converters)
- GBIC's supported
  - Netfinity Fibre Channel Short-Wave GBIC (P/N 03K9308) which supports Cable Group D
  - Netfinity Fibre Channel Long-Wave GBIC (P/N 03K9307) which supports Cable Group E
- Supported Attachments (up to seven, each requires a GBIC):
  - Netfinity Fibre Channel PCI Adapter (P/N 01K7297), which requires cable group D with short-wave GBIC
  - Second Netfinity Fibre Channel Hub (P/N 35231RU) requires cable group D or E with corresponding GBIC
  - Netfinity Fibre Channel RAID Controller Unit 35261RU requires cable group D and short-wave GBIC for each hub.
- Height is 1 U (1 U = 1.75 in or 44.45 mm). Two units can be mounted side-by-side in a 1 U space.
- Requires Netfinity Enterprise Rack or Expansion Cabinet, Netfinity Rack, NetBAY22 or 19-inch EIA-D Industry-Standard Rack. Mounting hardware is included with the hub.
- For optimum performance no more than two RAID controller units (P/N 35261RU) should be attached to a single hub (P/N 35231RU)

## Netfinity Fibre Channel PCI Adapter (P/N 01K7297)



- PCI to FCAL 64/32-bit host adapter
- Supported Attachments (use cable group D):
  - Netfinity Fibre Channel Hub (P/N 35231RU), requires available short-wave GBIC in hub
  - Netfinity Fibre Channel RAID Controller Unit 35261RU
  - Netfinity Fibre Channel Failsafe RAID Controller (P/N 01K7296)

Part Number	Description
35261RU	Netfinity Fibre Channel RAID Controller Unit
35231RU	Netfinity Fibre Channel Hub
01K7296	Netfinity Fibre Channel Failsafe RAID Controller
01K7297	Netfinity Fibre Channel PCI Adapter

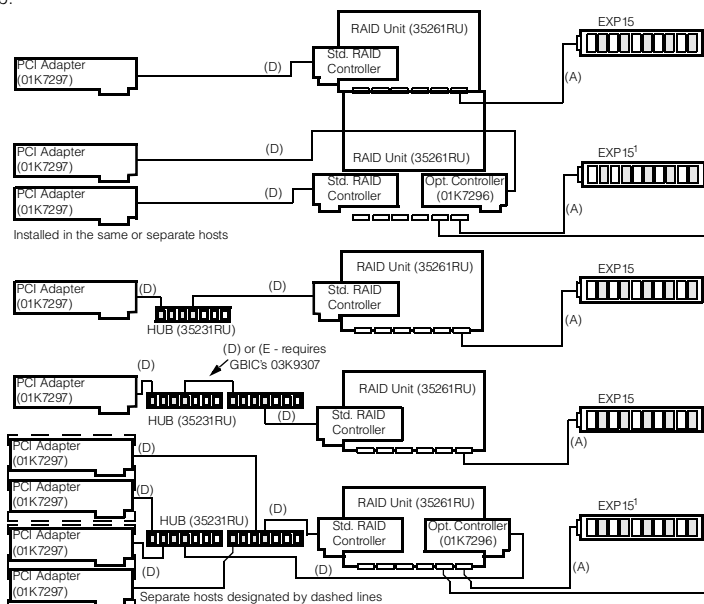
## Supported Cable Groups

Cable Group A (0.8 mm to 0.8 mm)	
03K9310	Netfinity 2 M Ultra2 SCSI Cable
03K9311	Netfinity 4.2 M Ultra2 SCSI Cable
37L7101	Netfinity 20 M Ultra2 SCSI Cable
Cable Group D (Short-Wave Fibre)	
03K9306	Netfinity Fibre Channel 5 M Cable
03K9305	Netfinity Fibre Channel 25 M Cable
Customer supplied short-wave cable of up to 500 meters (0.31 miles)	
Cable Group E (Long-Wave Fibre)	
Customer supplied long-wave cable of up to 10 kilometers (6.2 miles)	
GBIC	
03K9308	Netfinity Fibre Channel Short-Wave GBIC <sup>1</sup>
03K9307	Netfinity Fibre Channel Long-Wave GBIC

1. Four Netfinity Fibre Channel Short-Wave GBIC's (P/N 03K9308) are included with Netfinity Fibre Channel Hub (P/N 35231RU).

## Configuration Examples - Cable Group ( )

- Configured as two independent 5 HDD buses.

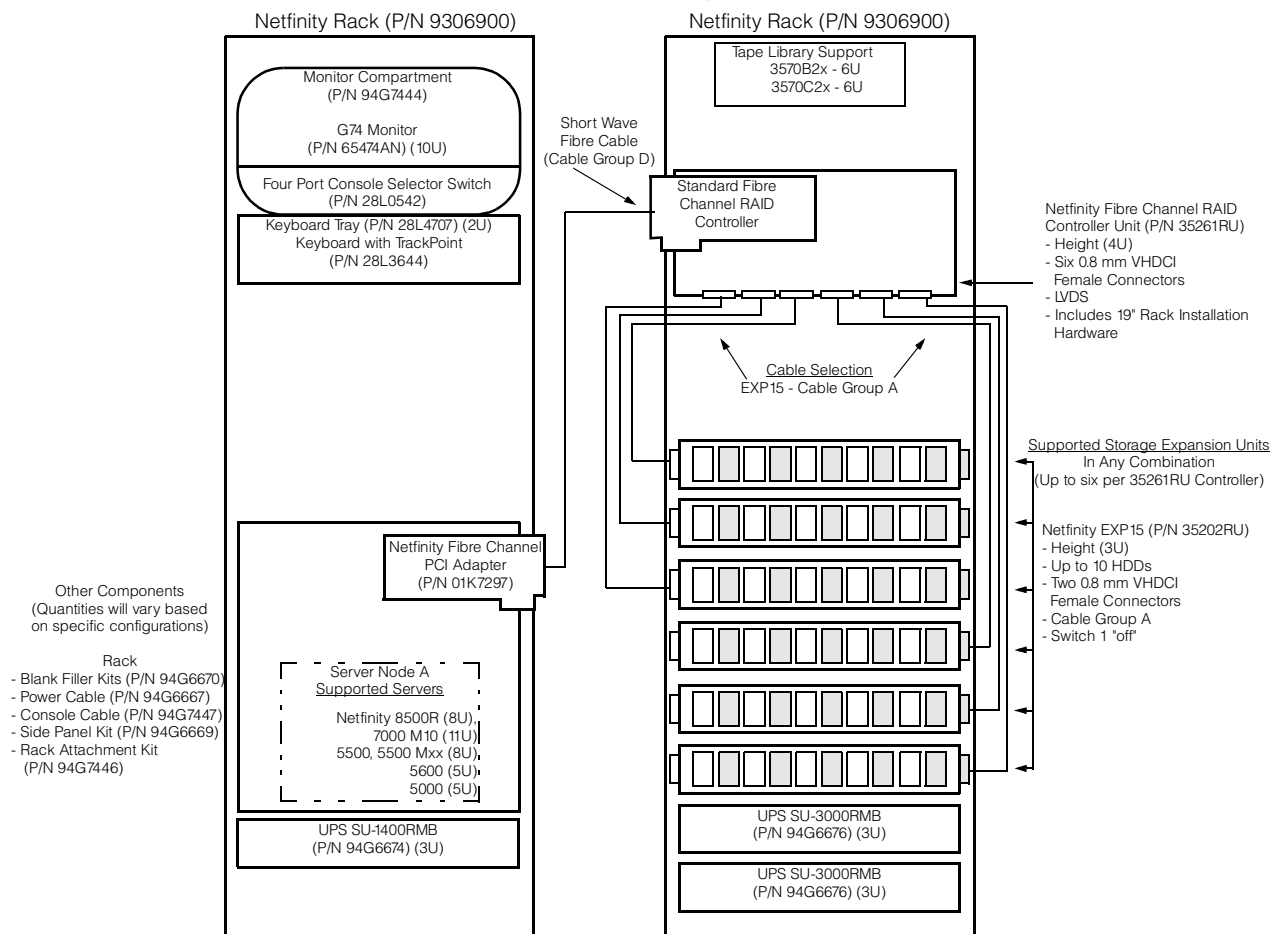




# IBM Netfinity Fibre Channel Solutions

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements

## High-speed single-node Netfinity Fibre Channel Storage configuration offering performance, bandwidth & capacity



Connector Types  
68-pin - High Density Connector  
0.8 mm - Very High Density Connection Interface VHDCI

Cable Group A (0.8 mm to 0.8 mm)  
03K9310 - Netfinity 2 M Ultra2 SCSI Cable  
03K9311 - Netfinity 4.2 M Ultra2 SCSI Cable  
37L7101 - Netfinity 20 M Ultra2 SCSI Cable

Cable Group D (Short-Wave Fibre)  
03K9306 - Netfinity Fibre Channel 5 M Cable  
03K9305 - Netfinity Fibre Channel 25 M Cable  
Customer supplied short-wave cable of up to 500 meters (0.31 miles)

Cable Group E (Long-Wave Fibre)  
Customer supplied long-wave cable of up to 10 kilometers (6.2 miles)

GBIC  
03K9308 - Netfinity Fibre Channel Short-Wave GBIC<sup>1</sup>  
03K9307 - Netfinity Fibre Channel Long-Wave GBIC

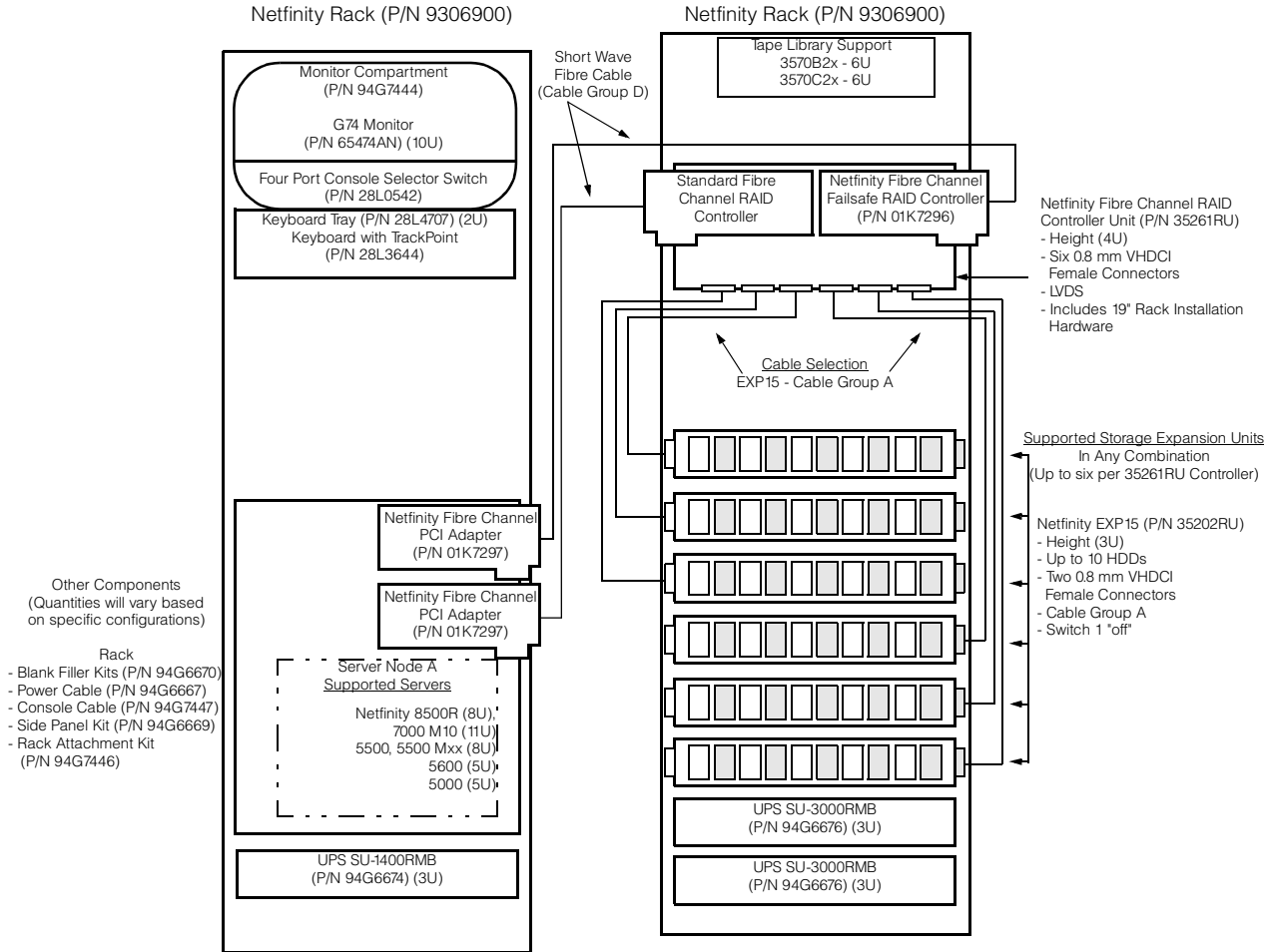
1. Four Netfinity Fibre channel Short-Wave GBIC's (P/N 03K9308) are included with Netfinity Fibre Channel Hub (P/N 35231RU)



# IBM Netfinity Fibre Channel Solutions

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements

## High-speed single-node Netfinity Fibre Channel Storage configuration with Microsoft NT failover support and RAID redundancy for availability, performance, capacity



Connector Types  
68-pin - High Density Connector  
0.8 mm - Very High Density Connection Interface VHDCI

Cable Group A (0.8 mm to 0.8 mm)  
03K9310 - Netfinity 2 M Ultra2 SCSI Cable  
03K9311 - Netfinity 4.2 M Ultra2 SCSI Cable  
37L7101 - Netfinity 20 M Ultra2 SCSI Cable

Cable Group D (Short-Wave Fibre)  
03K9306 - Netfinity Fibre Channel 5 M Cable  
03K9305 - Netfinity Fibre Channel 25 M Cable  
Customer supplied short-wave cable of up to 500 meters (0.31 miles)

Cable Group E (Long-Wave Fibre)  
Customer supplied long-wave cable of up to 10 kilometers (6.2 miles)

GBIC  
03K9308 - Netfinity Fibre Channel Short-Wave GBIC<sup>1</sup>  
03K9307 - Netfinity Fibre Channel Long-Wave GBIC

1. Four Netfinity Fibre channel Short-Wave GBIC's (P/N 03K9308) are included with Netfinity Fibre Channel Hub (P/N 35231RU)

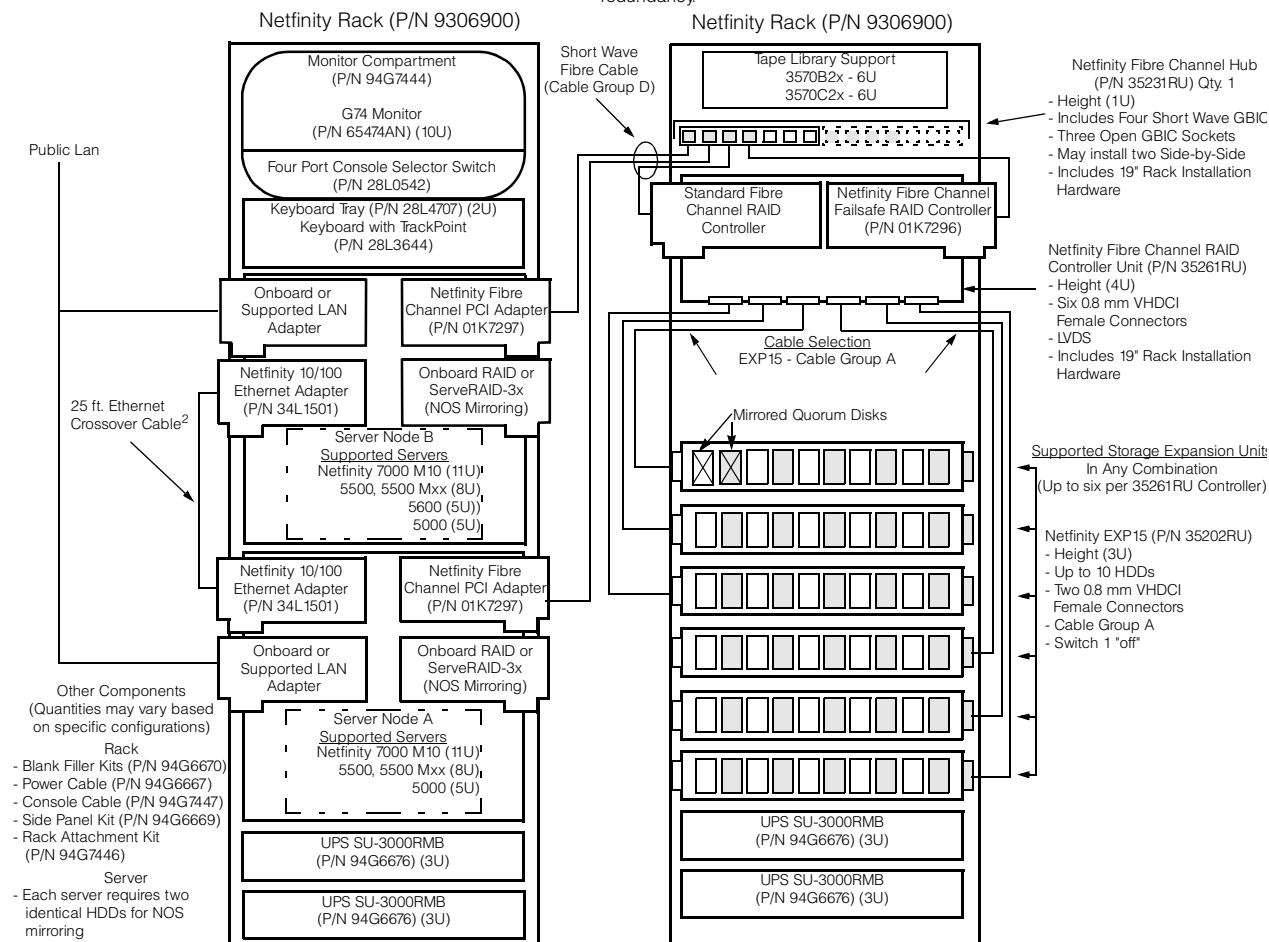


# IBM Netfinity Fibre Channel Solutions

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements

## Cluster Solution

High speed multiple node Microsoft Cluster Service (MSCS) and Netfinity Fibre Channel Storage configuration offering data protection and RAID redundancy



Connector Types  
68-pin - High Density Connector  
0.8 mm - Very High Density Connection Interface VHDCI

Cable Group A (0.8 mm to 0.8 mm)  
03K9310 - Netfinity 2 M Ultra2 SCSI Cable  
03K9311 - Netfinity 4.2 M Ultra2 SCSI Cable  
37L7101 - Netfinity 20 M Ultra2 SCSI Cable

Cable Group D (Short-Wave Fibre)  
03K9306 - Netfinity Fibre Channel 5 M Cable  
03K9305 - Netfinity Fibre Channel 25 M Cable  
Customer supplied short-wave cable of up to 500 meters (0.31 miles)

Cable Group E (Long-Wave Fibre)  
Customer supplied long-wave cable of up to 10 kilometers (6.2 miles)

GBIC  
03K9308 - Netfinity Fibre Channel Short-Wave GBIC<sup>1</sup>  
03K9307 - Netfinity Fibre Channel Long-Wave GBIC

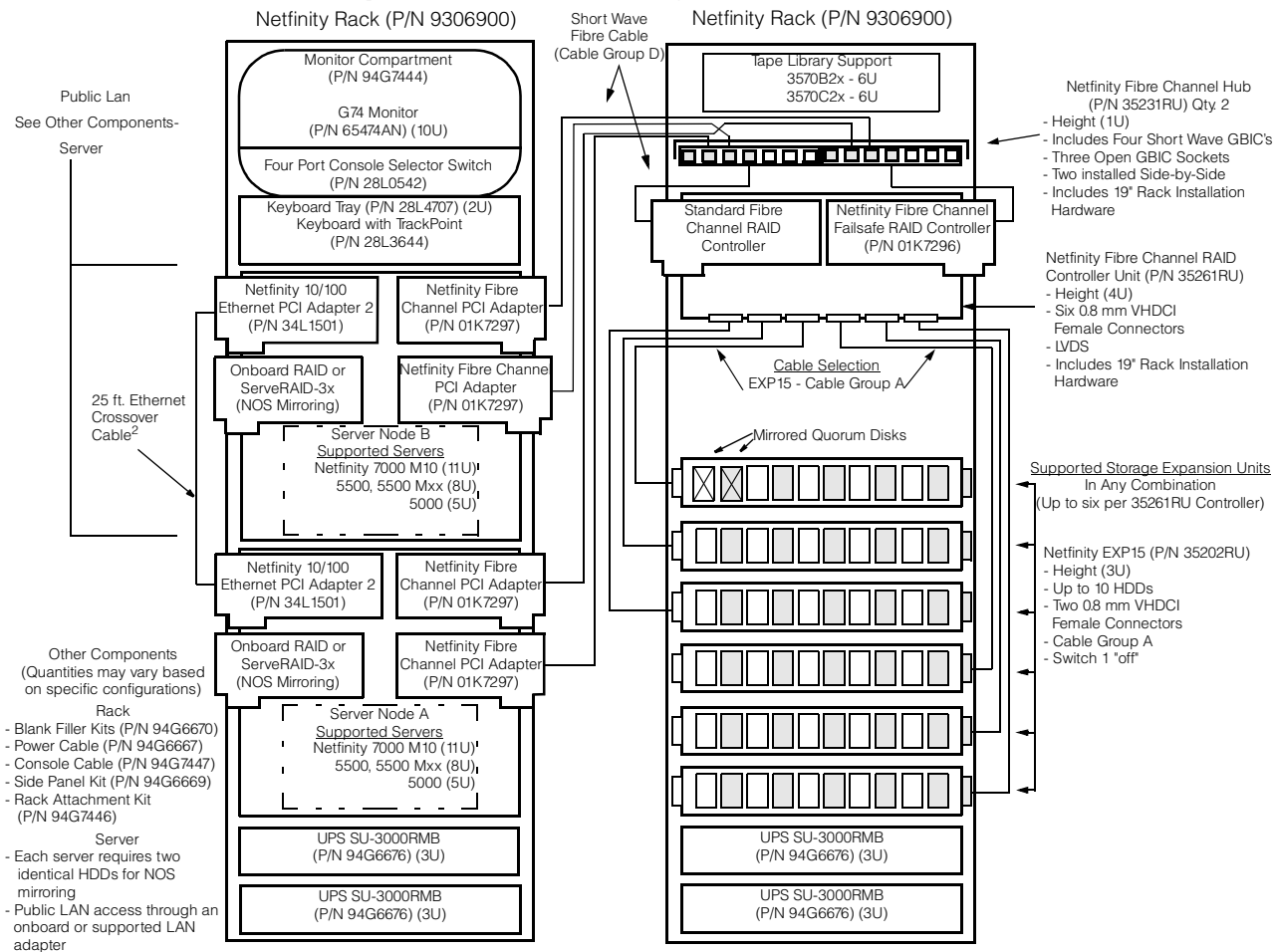
1. Four Netfinity Fibre channel Short-Wave GBIC's (P/N 03K9308) are included with Netfinity Fibre Channel Hub (P/N 35231RU)
2. Microsoft Cluster Server (MSCS) requires a private interconnect between clustered nodes. A 25 ft. Ethernet crossover cable is shown but not available from IBM as a separate option. Contact your IBM Business Partner for assistance.



# IBM Netfinity Fibre Channel Solutions

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements

## Advanced high-speed high-availability multiple node Microsoft Cluster Service (MSCS) and fully redundant Netfinity Fibre Channel Storage configuration offering the highest levels of data protection and availability and access to data



### Connector Types

68-pin - High Density Connector

0.8 mm - Very High Density Connection Interface VHDCI

### Cable Group A (0.8 mm to 0.8 mm)

03K9310 - Netfinity 2 M Ultra2 SCSI Cable

03K9311 - Netfinity 4.2 M Ultra2 SCSI Cable

37L7101 - Netfinity 20 M Ultra2 SCSI Cable

### Cable Group D (Short-Wave Fibre)

03K9306 - Netfinity Fibre Channel 5 M Cable

03K9305 - Netfinity Fibre Channel 25 M Cable

Customer supplied short-wave cable of up to 500 meters (0.31 miles)

### Cable Group E (Long-Wave Fibre)

Customer supplied long-wave cable of up to 10 kilometers (6.2 miles)

### GBIC

03K9308 - Netfinity Fibre Channel Short-Wave GBIC<sup>1</sup>

03K9307 - Netfinity Fibre Channel Long-Wave GBIC

- Four Netfinity Fibre channel Short-Wave GBIC's (P/N 03K9308) are included with Netfinity Fibre Channel Hub (P/N 35231RU)
- Microsoft Cluster Server (MSCS) requires a private interconnect between clustered nodes. A 25 ft. Ethernet crossover cable is shown but not available from IBM as a separate option. Contact your IBM Business Partner for assistance.

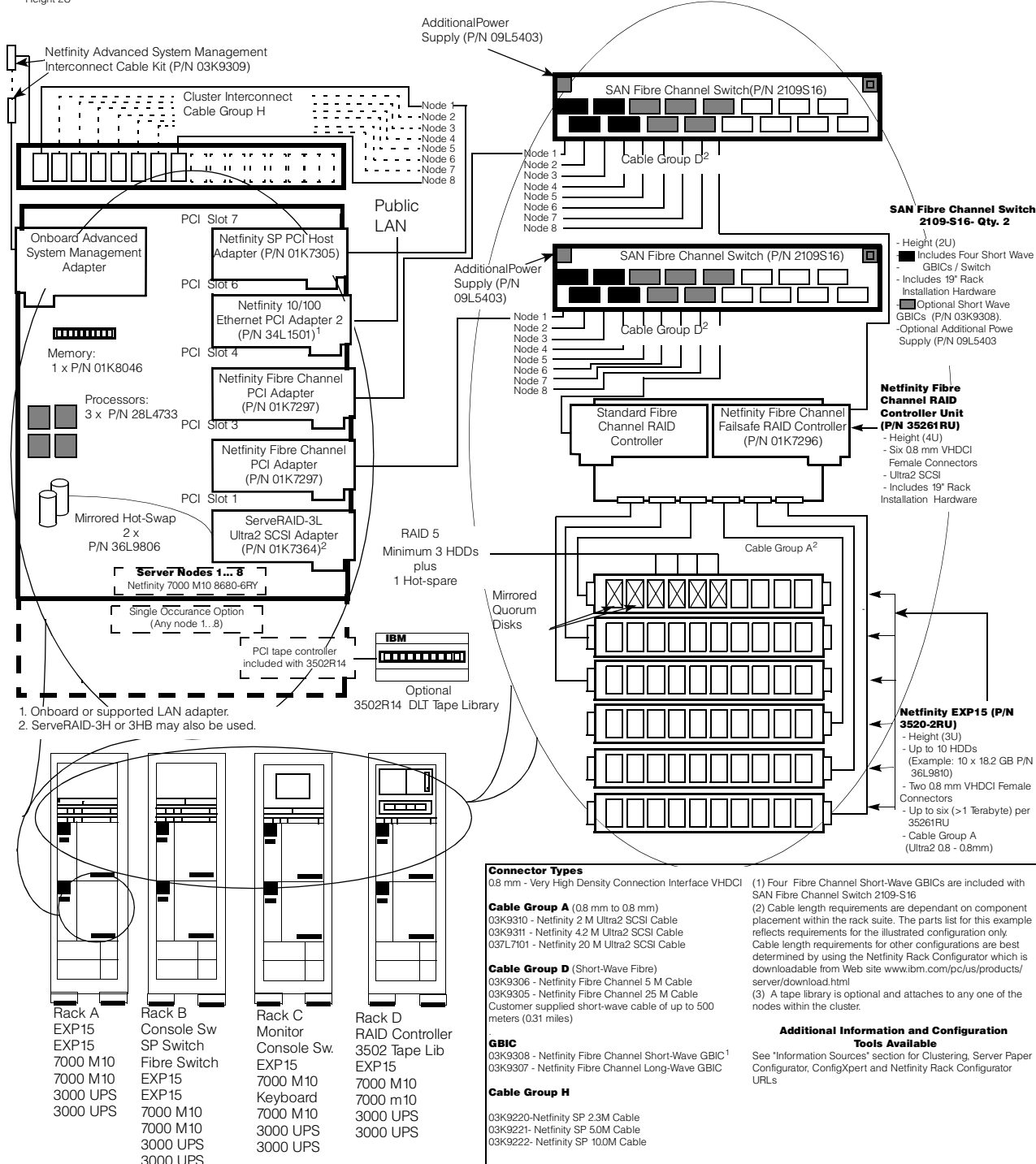


# Netfinity Availability Extensions for MSCS Eight Node Cluster

## Netfinity SP Switch (P/N 35291RY)<sup>2</sup>

- Eight Ports Standard
- Cable Group H
- Height 2U

Note: - The following sample configurations are for illustration only and may not be suitable for any specific customer installation.  
- Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.





# Netfinity Availability Extensions for MSCS Eight Node Cluster - Parts List<sup>1</sup>

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

Part Number	Description	Qty.	Usage
8680-6RY	Netfinity 7000 M10	8	Cluster Nodes
01K8046	Netfinity 7000 M10 1 GB Memory Expansion Kit - 4x256	8	Total of 1280 MB per node. Acceptable range is 1 to 4 GB
28L4733	Netfinity 7000 M10 500 MHz/512KB Upgrade with Pentium III Xeon Processor	24	3 per node, total of 4 SMP processors per node
36L9806	Netfinity 91 GB 10K-3 Wide Ultra SCSI Hot-Swap SL HDD	16	2 per node, mirrored NOS, attached to ServeRAID-3L
01K7364	Netfinity ServeRAID-3L Ultra2 SCSI Adapter	8	1 per node for NOS HDDs. Install in PCI slot 1.
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2	8	Public LAN - slot 6
01K7297	Netfinity Fibre Channel PCI Adapter	16	2 per node, each attaches to one of the two Fibre Hubs. Install in PCI slots 3 and 4.
01K7951	Netfinity 400 W Hot-Swap Redundant Power Supply II	8	1 per node, provides power supply redundancy for each node
03K9309	Netfinity Advanced System Management Interconnect Cable Kit	8	Provides attachment for remote system management for 8 nodes and SP Switch
02K6545	UltraSlim 56 W AC Adapter	8	Provides an independent backup power source for systems management
<b>Storage Subsystems</b>			
2109S16	SAN Fibre Channel Switch	2	Redundant short-wave (SW) connections from each of eight nodes to Netfinity Fibre Channel RAID Controller Unit. Each switch includes four standard SW GBICs.
09L5403	Additional Power Supply	2	Hot-Swap redundant power supply for SAN Fibre Channel Switch
03K9308	Netfinity Fibre Channel Short-Wave GBIC	10	
35261RU	Netfinity Fibre Channel RAID Controller Unit	1	Attaches to six EXP15's, with Failsafe Controller - two attachments to the hubs
01K7296	Netfinity Fibre Channel Failsafe RAID Controller	1	Installs in Controller Unit, provides redundant path to EXP15s
35202RU	Netfinity EXP15	6	One LVDS attachment to RAID Controller Unit per EXP15, max of 60 HDDs
36L9811	Netfinity EXP 36.4 GB 10K-3 Wide Ultra SCSI Hot-Swap HDD	58	A minimum of four RAID 5 HDDs (3 plus a hot-spare) with a maximum of 58
38L9809	Netfinity EXP 91 GB 10K-3 Wide Ultra SCSI Hot-Swap HDD	2	Mirrored quorum HDDs
3502R14	DLT Tape Library	1	Tape subsystems are optional. The 3502R14 includes a 3 M cable and PCI controller.
94G6676	APC Smart-UPS 3000RMB	8	Power connections are intra-rack only <sup>2</sup>
<b>Storage Cables</b>			
03K9306	Netfinity Fibre Channel 5 M Cable	20	16 node to hub, 2 hub to hub, 2 hub to RAID controllers
03K9310	Netfinity 2 M Ultra2 SCSI Cable	2	RAID controller to EXP15s
03K9311	Netfinity 4.2 M Ultra2 SCSI Cable	4	RAID controller to EXP15s
<b>Netfinity SP Switch</b>			
01K7305	Netfinity SP PCI Host Adapter	8	1 per node for cluster interconnect
35291RY	Netfinity SP Switch (2U)	1	Standard configuration supports interconnection of up to 8 nodes.
03K9221	Netfinity SP 5.0 M Cable	8	1 per node for cluster interconnect
03K9309	Netfinity Advanced System Management Interconnect Cable Kit	1	Allows SP Switch attachment to 8 node systems management network
<b>Other Non-Rack</b>			
Customer Supplied	Ethernet System Management Cables	8	Provides interconnection between Advanced System Management Adapters.
28L3644	Space Saver II Keyboard (1U)	1	Includes TrackPoint
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size)	1	-
<b>Rack / Related</b>			
9306900	Netfinity Rack Cabinet	4	Provides 42U of mounting space per rack
28L4707	Netfinity Rack Keyboard Tray	1	Allows keyboard 28L3640 to be stowed in a ready to use position
85H6735	Network Products Mounting Kit	1	Required for mounting 8271 switch in a Netfinity rack
94G7444	Monitor Compartment	1	Required for mounting G54 Monitor
28L0542	Netfinity Console Selector Switch (4-port)	1	Connects 3 nodes to 8-port switch
94G7445	Console Server Selector Switch (8-port)	1	Connects 5 nodes and 4-port switch to monitor and keyboard
94G6669	Side Panel Kit	1	Provides side panels for both ends of the rack suite.
94G7442	Fixed Shelf	1	Required for installation of 3502R14 tape library.

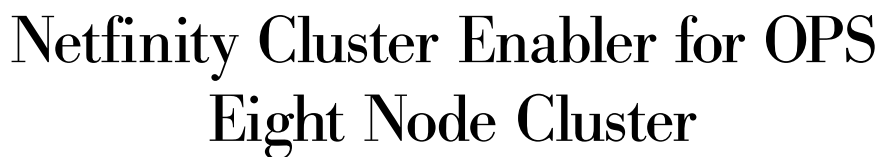


94G7446	Rack Attachment Kit	3	Provides hardware for attaching four racks together in a suite
94G6670	Blank Filler Panel Kit	3	Provides blank panels to fill the remaining rack space within the suite
94G6667	Power Cable - Type A14	10	Provides 14' power cables for UPS attachment to installed components
94G7447	12ft. Console Cable Set	9	Attaches each node to the console switch.
<b>Netfinity Availability Extensions for MSCS<sup>3</sup></b>			
36L9891	Netfinity Availability Extensions for MSCS (3 node)	1	Includes an initial 3 node license and installation.
36L9892	Netfinity Availability Extensions for MSCS (1 node)	5	Includes an additional single node license and installation for 5 nodes.

1. Cable, power, cooling and weight are dependent on component placement within the rack and rack suite. This parts list reflects one possible configuration of the listed components. Prior to ordering, you should configure your specific environment using the Netfinity Rack Configurator. The Netfinity Rack Configurator is downloadable from URL <http://www.ibm.com/pc/us/products/server/download.html>.

2. Pre-installation site planning information: 94G6676 contains eight L5-30P, 120V 30 amp circuitry.

3. Consists of Netfinity Availability Extensions for MSCS software licenses (support for up to eight nodes) and installation services for the complete Netfinity solution being installed. Netfinity Availability Extensions for MSCS is available through IBM Direct as a solution offering and is designed for installation by trained service personnel. Please contact your IBM representative for ordering information.



- Eight Ports Standard
- Cable Group H
- Height 2U

Note: - The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Customer specific Oracle Parallel Server configurations require IBM testing and approval prior to installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.





# Netfinity Cluster Enabler for OPS

## Eight Node Cluster - Parts List<sup>1</sup>

Note: - The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Customer specific Oracle Parallel Server configurations require IBM testing and approval prior to installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

Part Number	Description	Qty.	Usage
8680-6RY	Netfinity 7000 M10	8	Cluster Nodes
01K8046	Netfinity 7000 M10 1 GB Memory Expansion Kit - 4x256	8	Total of 1280 MB per node. Acceptable range is 1 to 4 GB
28L4733	Netfinity 7000 M10 500 MHz/512KB Upgrade with Pentium III Xeon Processor	24	3 per node, total of 4 SMP processors per node
36L9806	Netfinity 91 GB 10K-3 Wide Ultra SCSI Hot-Swap SL HDD	16	2 per node, mirrored NOS, attached to ServeRAID-3L
01K7364	Netfinity ServeRAID-3L Ultra2 SCSI Adapter	8	1 per node for NOS HDDs. Install in PCI slot 1.
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2	8	Public LAN - slot 6
01K7297	Netfinity Fibre Channel PCI Adapter	16	2 per node, each attaches to one of the two Fibre Hubs. Install in PCI slots 3 and 4.
01K7951	Netfinity 400 W Hot-Swap Redundant Power Supply II	8	1 per node, provides power supply redundancy for each node
03K9309	Netfinity Advanced System Management Interconnect Cable Kit	8	Provides attachment for remote system management for 8 nodes and SP Switch.
02K6545	UltraSlim 56 W AC Adapter	8	Provides an independent backup power source for systems management
<b>Storage Subsystems</b>			
2109S16	SAN Fibre Channel Switch	2	Redundant short-wave (SW) connections from each of eight nodes to Netfinity Fibre Channel RAID Controller Unit. Each switch includes four standard SW GBICs.
09L5403	Additional Power Supply	2	Hot-Swap redundant power supply for SAN Fibre Channel Switch
03K9308	Netfinity Fibre Channel Short-Wave GBIC	10	
35261RU	Netfinity Fibre Channel RAID Controller Unit	1	Attaches to six EXP15's, with Failsafe Controller - two attachments to the hubs
01K7296	Netfinity Fibre Channel Failsafe RAID Controller	1	Installs in Controller Unit, provides redundant path to EXP15s
35202RU	Netfinity EXP15	6	One LVDS attachment to RAID Controller Unit per EXP15, max of 60 HDDs
36L9811	Netfinity EXP 36.4 GB 10K-3 Wide Ultra SCSI Hot-Swap HDD	60	A minimum of four RAID 5 HDDs (3 plus a hot-spare) with a maximum of 60
3502R14	DLT Tape Library	1	Tape subsystems are optional. The 3502R14 includes a 3 M cable and PCI controller.
94G6676	APC Smart-UPS 3000RMB	8	Power connections are intra-rack only <sup>2</sup>
<b>Storage Cables</b>			
03K9306	Netfinity Fibre Channel 5 M Cable	20	16 node to hub, 2 hub to hub, 2 hub to RAID controllers
03K9310	Netfinity 2 M Ultra2 SCSI Cable	2	RAID controller to EXP15s
03K9311	Netfinity 4.2 M Ultra2 SCSI Cable	4	RAID controller to EXP15s
<b>Netfinity SP Switch</b>			
01K7305	Netfinity SP PCI Host Adapter	8	1 per node for cluster interconnect
35291RY	Netfinity SP Switch (2U)	1	Standard configuration supports interconnection of up to 8 nodes.
03K9221	Netfinity SP 5.0 M Cable	8	1 per node for cluster interconnect
03K9309	Netfinity Advanced System Management Interconnect Cable Kit	1	Allows SP Switch attachment to 8 node systems management network
<b>Other Non-Rack</b>			
Customer Supplied	Ethernet System Management Cables	8	Provides interconnection between Advanced System Management Adapters.
28L3644	Space Saver II Keyboard (1U)	1	Includes TrackPoint
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size)	1	-
<b>Rack / Related</b>			
9306900	Netfinity Rack Cabinet	4	Provides 42U of mounting space per rack
28L4707	Netfinity Rack Keyboard Tray	1	Allows keyboard 28L3640 to be stowed in a ready to use position
85H6735	Network Products Mounting Kit	1	Required for mounting 8271 switch in a Netfinity rack
94G7444	Monitor Compartment	1	Required for mounting G54 Monitor
28L0542	Netfinity Console Selector Switch (4-port)	1	Connects 3 nodes to 8-port switch
94G7445	Console Server Selector Switch (8-port)	1	Connects 5 nodes and 4-port switch to monitor and keyboard
94G6669	Side Panel Kit	1	Provides side panels for both ends of the rack suite.
94G7442	Fixed Shelf	1	Required for installation of 3502R14 tape library.
94G7446	Rack Attachment Kit	3	Provides hardware for attaching four racks together in a suite



94G6670	Blank Filler Panel Kit	3	Provides blank panels to fill the remaining rack space within the suite
94G6667	Power Cable - Type A 14	10	Provides 14' power cables for UPS attachment to installed components
94G7447	12ft. Console Cable Set	9	Attaches each node to the console switch.
<b>Netfinity Cluster Enabler for OPS3</b>			
36L9893	Netfinity Cluster Enabler for OPS (4 node)	1	Includes an initial 4 node license and installation.
36L9894	Netfinity Cluster Enabler for OPS (2 node)	2	Includes additional licenses and installation for four nodes.

1. Cable, power, cooling and weight are dependent on component placement within the rack and rack suite. This parts list reflects one possible configuration of the listed components. Prior to ordering, you should configure your specific environment using the Netfinity Rack Configurator. The Netfinity Rack Configurator is downloadable from URL <http://www.ibm.com/pc/us/products/server/download.html>

2. Pre-installation site planning information: 94G6676 contains eight L5-30P 120V 30 amp circuitry.

3. Consists of several components distinct from the OPS application. It includes Netfinity Cluster Enabler for OPS software licenses (support for up to eight nodes) and installation services for the complete Netfinity solution being installed. Netfinity Cluster Enabler for OPS is available through IBM Direct as a solution offering and is designed for installation by trained service personnel. Please contact your IBM representative for ordering information.

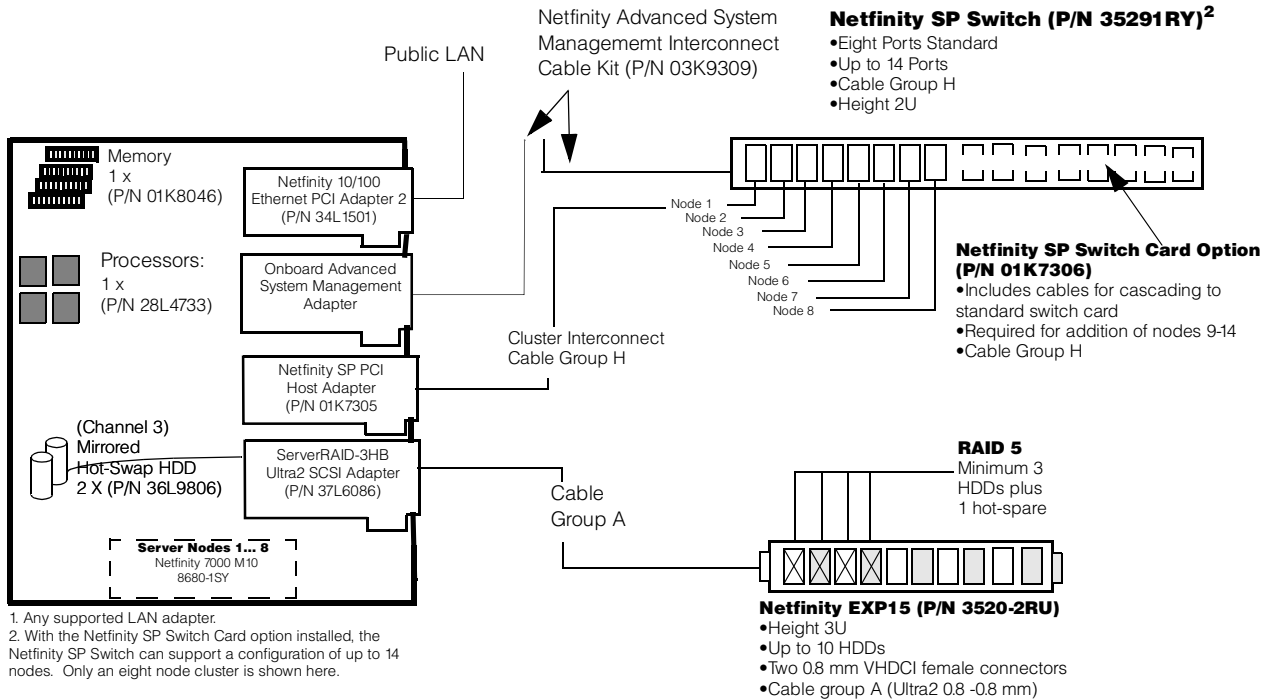




# IBM Netfinity SP Switch Eight Node Cluster

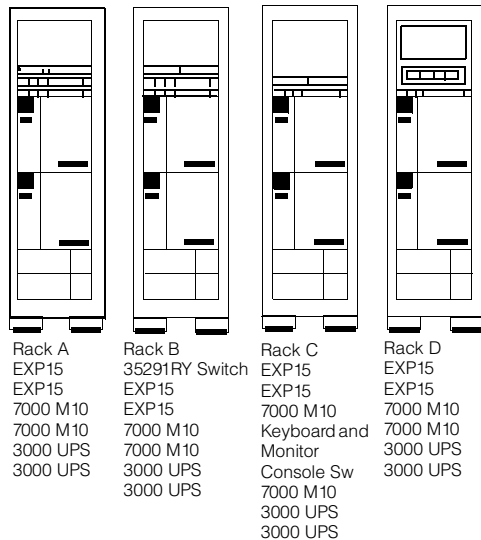
## IBM DB2 Universal Database Enterprise-Extended Edition

Note: - The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.



1. Any supported LAN adapter.

2. With the Netfinity SP Switch Card option installed, the Netfinity SP Switch can support a configuration of up to 14 nodes. Only an eight node cluster is shown here.



<b>Connector Types</b>	
0.8 mm - Very High Density Connection Interface VHDCI	
<b>Cable Group A</b> (0.8 mm to 0.8 mm)	
03K9310 - Netfinity 2 M Ultra2 SCSI Cable	
03K9311 - Netfinity 4.2 M Ultra2 SCSI Cable	
37L7101 - Netfinity 20 M Ultra2 SCSI Cable	
<b>Cable Group H</b>	
03K9220 - Netfinity SP 2.3 M Cable	
03K9221 - Netfinity SP 5.0 M Cable	
03K9222 - Netfinity SP 10.0 M Cable	
<b>Additional Information and Configuration Tools</b>	
See "Information Sources" section for Clustering, Server Paper Configurator, ConfigXpert and Netfinity Rack Configurator URLs	





# IBM Netfinity SP Switch Eight Node Cluster

## IBM DB2 Universal Database Enterprise-Extended Edition Parts List<sup>1</sup>

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

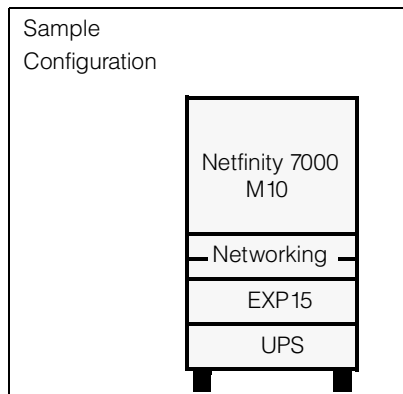
Part Number	Description	Qty.	Usage
8680-1SY	Netfinity 7000 M10	8	Cluster Nodes
01K8046	Netfinity 7000 M10 1 GB Memory Expansion Kit - 4x256	8	Total of 1280 MB per node. Acceptable range is 1 to 4 GB
33L5107	Netfinity 550 MHz/512 KB Upgrade with Pentium III Xeon Processor	8	1 per node, total of 2 SMP processors per node
36L9806	Netfinity 91 GB 10K-3 Wide Ultra SCSI Hot-Swap SL HDD	16	2 per node, mirrored NOS, attached to ServeRAID-3L
37L6086	Netfinity ServeRAID-3HB Ultra2 SCSI Adapter	8	1 per node for NOS HDDs (channel3) and EXP15 external storage
34L1501	Netfinity 10/100 Ethernet PCI Adapter 2	8	1 per node for public LAN
01K7951	Netfinity 400 W Hot-Swap Redundant Power Supply II	8	1 per node, provides power supply redundancy for each node
03K9309	Netfinity Advanced System Management Interconnect Cable Kit	8	Provides attachment for remote system management
02K6545	UltraSlim 56 W AC Adapter	8	Provides an independent backup power source for systems management
94G6676	APC Smart-UPS 3000RMB	8	Power connections are intra-rack only <sup>2</sup>
<b>Storage Subsystems</b>			
35202RU	Netfinity EXP15	8	One LVDS attachment per EXP15 to ServeRAID-3HB in respective servers
36L9810	Netfinity EXP 18.2 GB 10K-3 Wide Ultra SCSI Hot-Swap HDD	80	Maximum of 10 per EXP15 (a minimum of four RAID 5 HDDs (3 plus a hot-spare) per EXP15)
03K9311	Netfinity EXP 4.2 M Ultra2 SCSI Cable	8	RAID controller to EXP15s
<b>Netfinity SP Switch Components</b>			
01K7305	Netfinity SP PCI Host Adapter	8	1 per node for cluster interconnect
35291RY	Netfinity SP Switch (2U)	1	One 35291RY for up to 8 nodes, add SP Switch Option Card (P/N 01K7306) for 9 to 14 nodes.
03K9221	Netfinity SP 5.0 M Cable	8	1 per node for cluster interconnect
03K9309	Netfinity Advanced System Management Interconnect Cable Kit	1	
<b>Other Non-rack</b>			
28L3644	Space Saver II Keyboard	1	Includes TrackPoint - Advanced TP features are not supported.
9513AG1	T55A Flat Panel Color Monitor (15.0") Viewable Image Size), stealth black	1	Installs in keyboard tray 28L4707 with mounting kit 37L6857
<b>Rack / Related</b>			
9306900	Netfinity Rack Cabinet	4	Provides 42U of mounting space per rack
28L4707	Netfinity Rack Keyboard Tray (3U with monitor kit 37L6857 installed)	1	Allows keyboard 28L3644 to be stowed in a ready-to-use position
37L6857	Flat Panel Monitor Rack Mount Kit	1	Required for installation of flat panel monitor in keyboard tray 28L4707
94G7445	Console Server Selector Switch (8-port)	1	Connects 8 nodes to monitor and keyboard
94G6669	Side Panel Kit	1	Provides side panels for both ends of the rack suite.
94G7446	Rack Attachment Kit	3	Provides hardware for attaching four racks together in a suite
94G6670	Blank Filler Panel Kit	4	Provides blank panels to fill the remaining rack space within the suite
94G6667	Power Cable - Type A14	28	Provides 14' power cables for UPS attachment to installed components
94G7447	12ft. Console Cable Set	8	Attaches each node to the console switch.

1. Cable, power, cooling and weight are dependent on component placement within the rack and rack suite. This parts list reflects one possible configuration of the listed components. Prior to ordering, you should configure your specific environment using the Netfinity Rack Configurator. The Netfinity Rack Configurator is downloadable from URL [www.ibm.com/pc/us/products/server/download.html](http://www.ibm.com/pc/us/products/server/download.html).

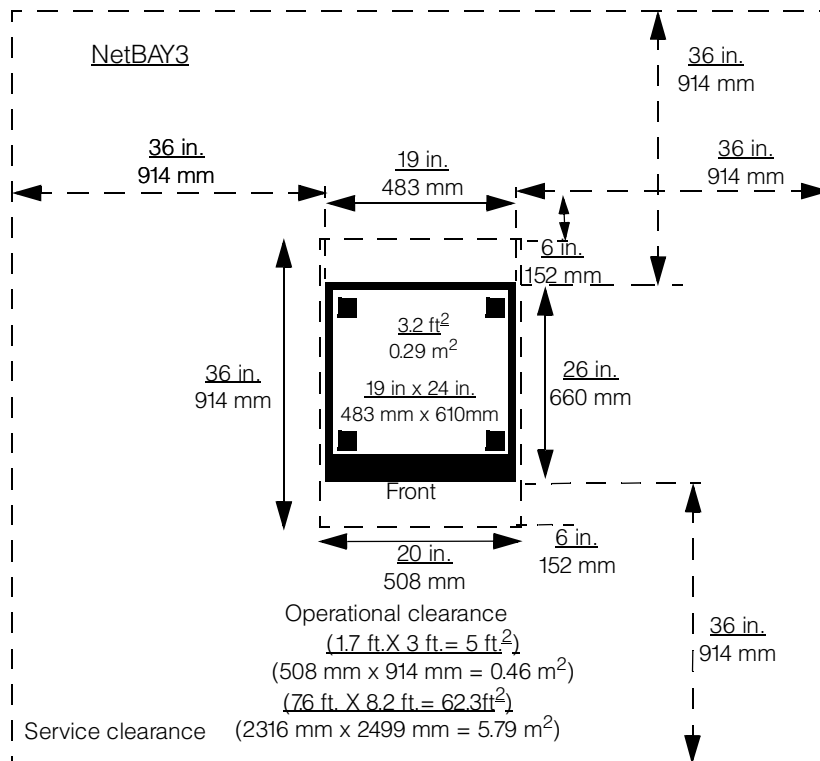
2. Pre-installation site planning information: 94G6676 contains eight L5-30P, 120V 30 amp circuitry.



# IBM Netfinity NetBAY3/NetBAY3E Stackable Enclosures



- Installation Guidelines:**
- 1) Locate power units with line cords in the bottom enclosure.
  - 2) Install components starting from the bottom; start with the heaviest device.
  - 3) If nothing is installed in the enclosure, attach the rear blank panel for stability.



Supported Devices	NetBAY3	NetBAY3E	Size (U)	Weight(lb/kg)	Max/Enclosure	Max/Stack
<b>Servers</b>						
Netfinity 7000-M10 <sup>1</sup>	X	-	-	160/72.6	n/a	1
Netfinity 5500	X	-	-	120/54.4	n/a	1
Netfinity 5500-Mxx	X	-	-	123.4/56.0	n/a	1
Netfinity 8500R <sup>3</sup>	-	X	-	170/77.1	n/a	1
<b>Expansion<sup>2</sup></b>						
Netfinity EXP15	X	X	3	107/48.5	1	3
<b>Tape Units<sup>2</sup></b>						
NetMEDIA 3551001	X	X	3	37/17	1	3
<b>Power<sup>2</sup></b>						
APC Smart-UPS 1400RMB	X	X	3	55/24.9	1	1
APC Smart-UPS 3000RMB	X	X	3	112/50.8	1	1
100-120V PDU	X	X	1	5/2.3	1	1
200-240V PDU	X	X	1	8/3.6	1	1
<b>Networking<sup>2</sup></b>						
2210 Multiprotocol Router	X	X	1, 2	7/3.2, 20/9.1	3, 1	9, 3
8230 T-R Controlled Access Unit	X	X	2	15/6.8	1	3
8235 Dial-in Access to LANs	X	X	1	8/3.6	3	9
8237 Ethernet Hub	X	X	2	10/4.5	1	3
8238 Nways T-R Hub	X	X	2	11/5.0	1	3
8271 Ethernet Switch	X	X	2	16/7.3	1	3
8272 T-R Switch	X	X	2	16/7.3	1	3
8285 ATM Switch	X	X	3	70/31.8	1	3

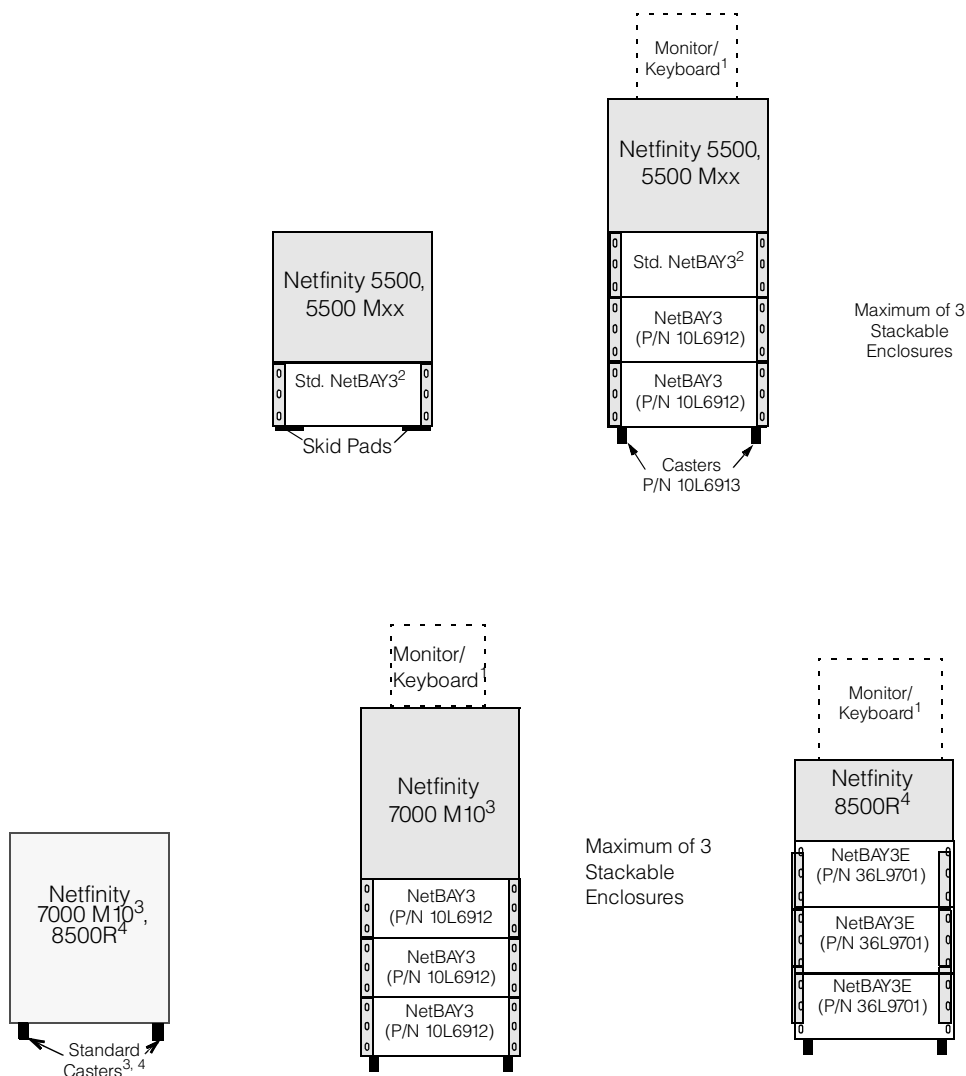
1. Netfinity 7000-M10 systems are rack mountable and ship without a keyboard. In order to be utilized with a NetBAY3 or in a tower configuration, optional Rack-to-Tower Conversion Kit (P/N 01K8005) must be installed.

2. NetBAY3 and NetBAY3E do not contain a top cover and therefore require a supported server as the top component in a stack

3. Netfinity 8500R systems are rack mountable and ship without a keyboard. In order to be utilized with a NetBAY3E or in a tower configuration, optional Rack-to-Tower Kit (P/N 28L4705) must be installed.



# IBM Netfinity NetBAY3/3E Stackable Enclosure



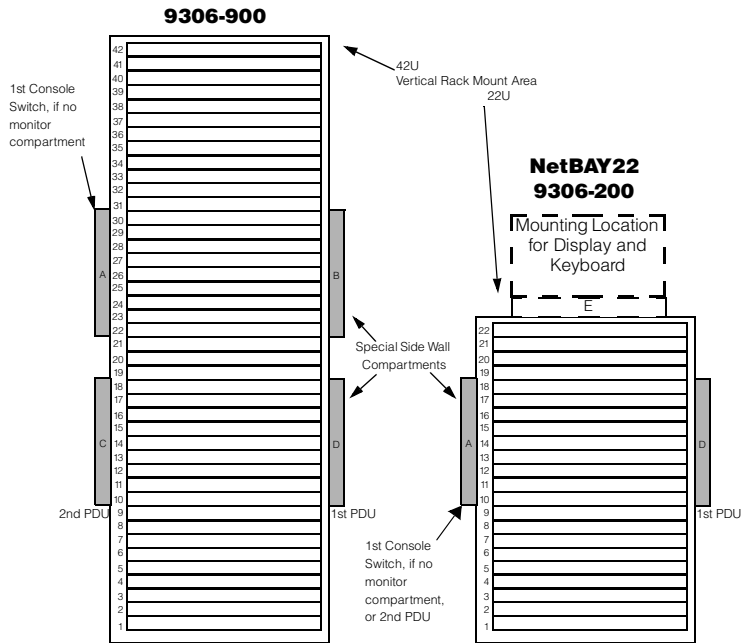
IBM NETFINITY NETBAY3  
STACKABLE ENCLOSURE

1. Rack models of Netfinity servers ship without a keyboard or mouse. Those supported for stacking on a NetBAY3 or NetBAY3E must have a rack-to-tower kit installed. See the specific system configurator under the section titled "Netfinity...Power, Monitor & Accessories".  
2. Netfinity 5500 and 5500 Mxx tower models or models with Rack-to-Tower Kit (P/N 01K8021) include a single NetBAY3 with skid pads.  
3. The rack-to-tower conversion kit for Netfinity 7000 M10 includes casters which can also be used with optional NetBAY3 (P/N 10L6912).  
4. The rack-to-tower conversion kit for Netfinity 8500R includes casters which can also be used with optional NetBAY3E (P/N 36L9701).



# IBM Netfinity Rack Cabinet and Options

Note: For a robust rack configurator application access URL <http://www.ibm.com/pc/us/products/server/download.html>.



## Direct Rack Mount<sup>1</sup>: Units Supported

IBM Servers		
Netfinity 4000R	All Models	1U <sup>5</sup>
Netfinity 5000	Rack Models	5U
Netfinity 5500, 5500 Mxx	Rack Models	8U
Netfinity 5600	Rack Models	5U
Netfinity 7000 M10	All Models	11U
Netfinity 8500R	All Models	8U <sup>4</sup>

IBM Storage Expansion Units		
Netfinity EXP15	3520-2Rx	3U
Netfinity EXP200	35301RU	3U
7133 Serial Disk System <sup>2,3</sup>	7133-020	4U

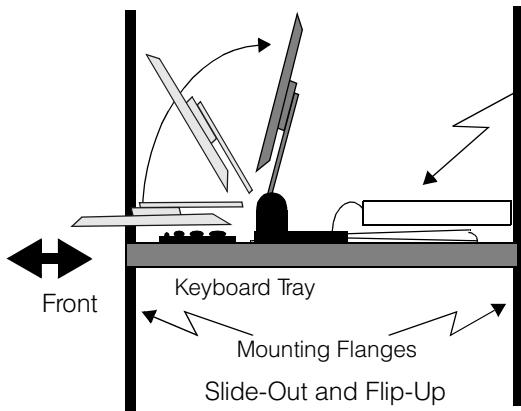
IBM Fibre Solutions		
RAID Controller Unit	35261RU	4U
Fibre Channel Hub	35231RU	1U

IBM Tape Units		
NetMEDIA	3551001	3U
Magstar MP 3570	3570B21/B22	6U
Magstar MP 3570	3570C21/C22	6U

IBM Networking Products		
Dial-in Access to LANS	8235-03x	1U

1. Mounting hardware provided with product
2. Requires Rail Kit (FC 3093). 208V Power cord included, optional 110V power cord (FC 9886/18M or FC 9800/28M) can be ordered. If the Black Cover Kit (FC 3020) is ordered, no white cover is shipped with system. Other specify codes may be required.
3. The 7133 Serial Disk System is not a IBM Personal Systems Group product. For additional configuration support, product information and ordering of these IBM Storage offerings, visit the IBM storage Website <http://www.ibm.com/storage> or contact your IBM representative.
4. Netfinity 8500R requires installation of extension kit 36L9703 or 36L9702 when installed in a 9306-900 or 9306-200 respectively for proper rear door closure clearance.
5. To provide adequate cooling, rack front door must be removed.

Keyboard/Pointer/Monitor & Switch ... all in 3U



- Console Switch
- Mounts to rear flanges
  - Shares 3U space with display, keyboard and tray
- Keyboard Tray Components
- 28L4707 Netfinity Rack Keyboard Tray
  - 37L6857 Netfinity Flat Panel Monitor Rack Mount Kit
  - 28L3644 Space Saver Keyboard
  - 9513AG1 T55A Flat Panel Color Monitor



### Optional Accessories

Part Number	Mounting Support	Rack Space	Units Supported
94G7442	Fixed Shelf: width x depth= (439 mm x 663mm) 173 in. x 261 in max. weight= (45 kg)100lbs.	2 to xx U	<b>IBM Networking Products</b> 8222-008, 016 Nways Enet Wkqp Hub 2U 8225-003 Ethernet Hub 2U
85H6735	Network Products Mounting Kit	1 to 5 U	<b>IBM Networking Products</b> Ethernet Switch 8271-108, 216 2U Ethernet Hub 8237-00x 2U Token-Ring Switch 8272-108 2U Token-Ring Controlled Access Unit 8230-04A, 04P 2U Nways LAN Switch 8270-800 5U Nways Token-Ring Hub 8238-xx1 2U ATM Switch 8285-00B, 00E 3U Multi-Protocol Router 2210-12x 1U Multi-Protocol Router 2210-x4x 2U
36L9702	Netfinity NetBAY22 Rack Extension Kit installs on the rear of a 9306200 <sup>1</sup> .	-	Netfinity NetBAY22 9306200
36L9703	Netfinity Rack Extension Kit installs on the rear of a 9306900 <sup>1</sup> .	-	Netfinity Rack 9306900

Part Number	Description	Console Support	Devices Supported		
			Devices	Height	Part Number
94G7444	Monitor compartment	One monitor and one console	<b>Monitors</b>		
			G54	9U	-
			G74	10U	-
28L4707	Netfinity Rack Keyboard Tray	One flat panel display and one space saver keyboard, and one keyboard mouse	<b>Keyboards/Mouses<sup>2</sup></b>		
			Space Saver II Keyboard <sup>3, 4</sup>	1U	28L3644
			TrackPoint IV 104-Key <sup>3</sup>	1U	01K1260
			Tower Model Keyboards <sup>5</sup>	1 to 2U	-
			<b>Monitors</b>		
			T55A flat panel monitor <sup>6</sup>	-	9513AG1
			Flat Panel Monitor Mount Kit <sup>7</sup>	3U	37L6857
37L6857	Flat Panel Monitor Rack Mount Kit	Supports installation of a flat panel monitor into tray 28L4707	<b>Monitors</b>		
			T55A Flat Panel Monitor	-	9513AG1
94G7445	Console Server Selector Switch (8-port, Tier up to 64)	Mounts behind monitor compartment or in rack side	Console Cable Set - 12ft. (366 m)	-	94G7447
28L0542	Netfinity Console Server Selector Switch (4-port)	When used with keyboard tray 28L4707 and flat panel kit 37L6857 it can also be installed behind the keyboard tray			
94G7447	Console Cable Set- (366 m) 12 ft.	Attaches server to console switch			
			Console Server Selector Switch (8-port)	-	94G7445
			Netfinity Console Server Selector Switch (4-port)	-	28L0542

1.Expands current racks for better cable management or to accomodate systems requiring greater installation depth.

2. Check system sections for support of desired keyboards, mouse and monitors.

3. Advanced TrackPoint IV features are not supported by Netfinity servers or rack console switches.

4. Space saver keyboards may be stowed in a ready-to-use position within tray 28L4707.

5. Tower models of Netfinity servers includes keyboards, which are supported by both keyboard trays and console switches. These are not space saver keyboards.

6. Installation in a Netfinity Rack Keyboard Tray (P/N 28L4707) requires Netfinity Flat Panel Monitor Rack Mount Kit (P/N 37L6857). A space saver keyboard may coexist within the same 28L4707 keyboard tray.

7. When installed in Netfinity Rack Keyboard Tray (P/N 28L4707) a flat panel monitor and space saver keyboard may coexist in the tray. Hardware is included for mounting a console selector switch to the rack directly to the rear of the tray thus sharing the same 3U space. See the Keyboard/Pointer/Monitor & Switch diagram above.

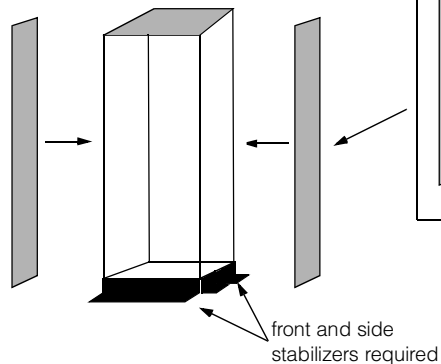


Part Number	Power Support	Rack Space	Comments
94G6666	100-120V 12a Power Distribution Unit	--	8 NEMA 5-15R outlets Mounts in rack side wall D.C
94G7450	200-240V 16a Power Distribution Unit	--	10 IEC 320-C13 outlets Mounts in rack side wall D.C
94G6674 94G6675	1400VA UPS 120V US/C/LA 220-240V EMEA/AP	3U	6 NEMA 5-15R outlets 4 IEC 320-C13 outlets
94G6676 94G6677	3000VA UPS 120V US/C/LA 120-240V EMEA/AP	3U	8 NEMA 5-15R outlets 8 IEC 320-C13 and 1 C19
94G6667 94G7448	Power Cables Type Connectors A14 IEC 320-C13 to NEMA 5-15P C12 IEC 320-C13 to IEC 320-C14	- -	Length (4.27 m) 14 ft. (3.66 m) 12 ft.
Part Number	Miscellaneous	Rack Space	Comments
94G6670	Blank Filler Panel Kit 1U panel (qty = 2) 3U panel (qty = 1) 5U panel (qty = 1)	1U + 1U 3U 5U	Use as required to fill empty space in the vertical rack mount area.

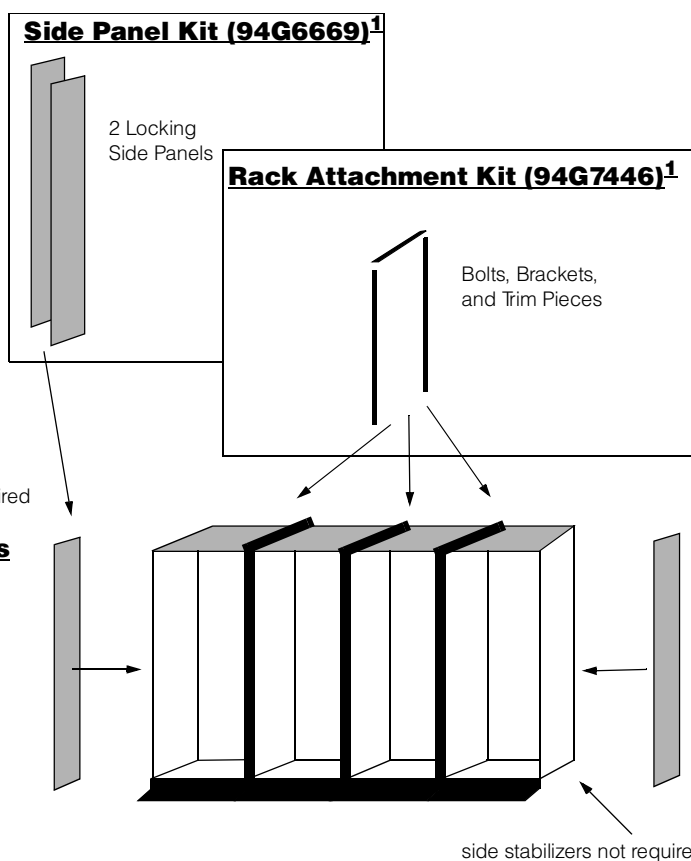
Note: You can select up to two power units per rack. Select the optional Power Cables when the standard cable is not long enough or has incompatible power plug.

### 9306-900 Single Cabinet or Multi-Rack Suite Options

#### Single Stand-alone IBM Netfinity Rack Cabinet

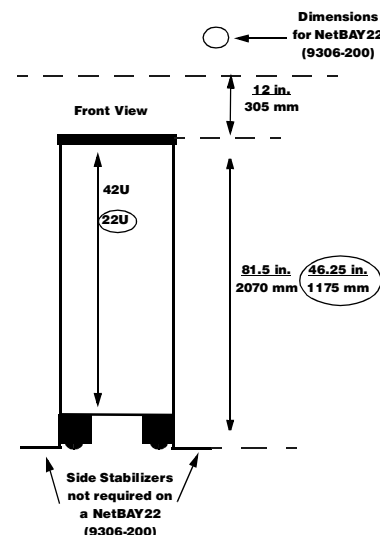
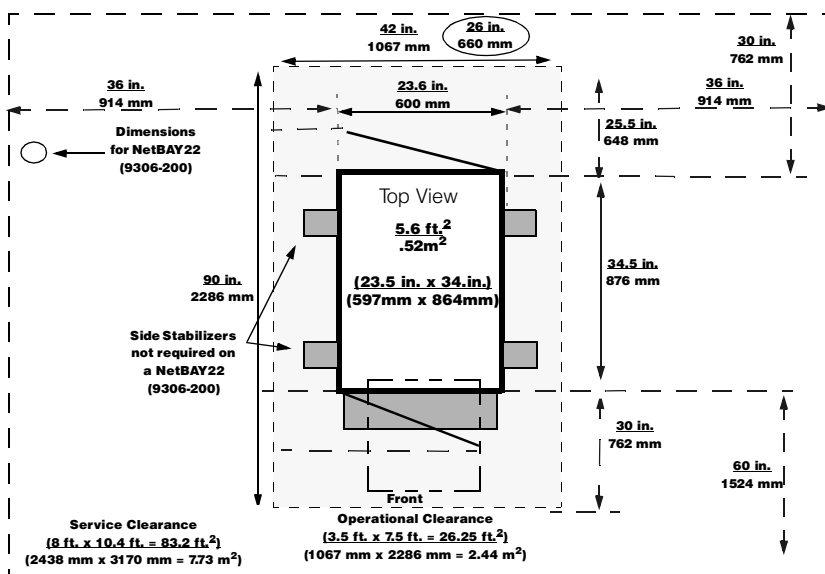


#### Multi-Rack Suites -- 2 to 8 racks

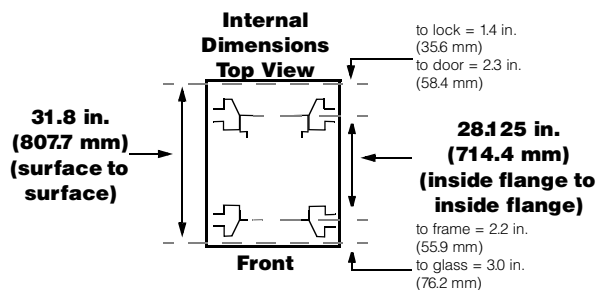


1. Supported on 9306-900 only

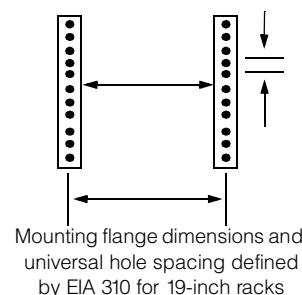
## Netfinity Rack - Cabinet and Options Dimensions 9306-900 and NetBAY22 (9306-200)



	9306-900		9306-200
Weight (lb/kg)	Moveable	Stationary	Moveable or Stationary
Empty rack	276/125	276/125	182/83
Max load	824/374	1424/646	746/338
Total	1100/499	1700/771	928/421

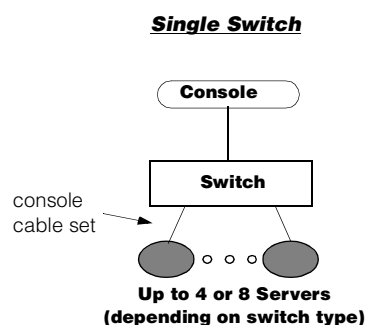
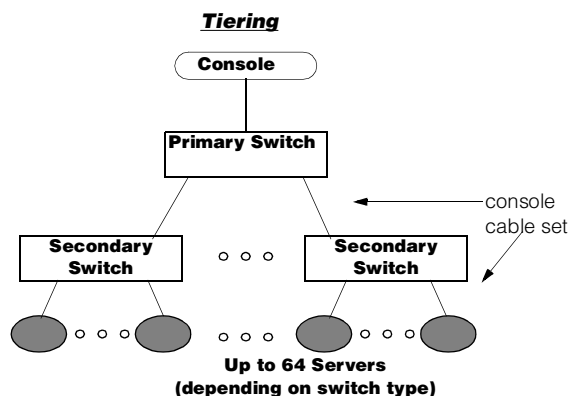


EIA 310-D standard 19-inch, type A cabinet  
1U = (44.45 mm) 1.75 inches



IBM NETFINITY RACK CABINET

### Switch Arrangements





# Appendix A: Tape Drive Attributes

Part Number	SCSI Interface										
	LEGEND HH: Half High - approx. height of 1.6" SL: Slim Line - approx. height of 1"										
	Description	SCSI Interface (bit)	Form Factor	Bezel - (B)lack, (W)hite	Max GB Native/Compr. <sup>2</sup>	MB/sec. - Native/Compr. <sup>2</sup>	Termination Incl.	68/50-pin Converter Incl.	Internal Cables	Data/Cleaning Cartridges Included	Ext. Tape Enclosures <sup>1</sup>
01K1282	12/24 GB DDS/3 4-mm Internal Tape Drive	8	3.5"HH or 5.25"HH	B/W	12/24	11/2.2	Y <sup>3</sup>	Y	-	1/1	3510020
00N7991	20/40 GB DDS/4 4-mm Internal Tape Drive	16 Ultra2 LVD	3.5"HH or 5.25"HH	B	20/40	2.75/5.5	Y <sup>3</sup>	-	-	1/1	3510020, 3551001
01K1319	10/20 GB NS Internal SCSI Tape Drive	8	3.5"SL or 5.25"HH	B/W	10/20	1/2	Y <sup>3</sup>	Y	-	1/0	3510020, 3551001
01K1325	20/40 GB 8-mm Internal SCSI Tape Drive	16	5.25"HH	B	20/40	3/6	N <sup>4</sup>	-	-	1/1	3510020 <sup>5</sup> , 3551001
01K1320	20/40 GB DLT Internal SCSI Tape Drive	8	5.25"FH	B	20/40	1.5/3	Y <sup>6</sup>	Y	16-bit, 4 drop	1/0	3503B0X, 3551001
04K0149	35/70 GB DLT Internal SCSI Tape Drive	16	5.25"FH	B	35/70	5/10	N <sup>4</sup>	-	16-bit, 4 drop	1/0	3503B0X <sup>5</sup> , 3551001
00N7990	40/80 GB DLT Internal SCSI Tape Drive	16 LVD	5.25" FH	B	40/80	6/10	N <sup>4</sup>	-	-	1/0	3503B0X <sup>5</sup> , 3551001
Associated Options											
32G3918	SCSI-2 16-bit Active Terminator	16	Ext.	-	-	-	Y	N	-	-	3510020, 3503B0X
94G7587	PC Server SCSI Terminator Kit	8/16	Int.	-	-	-	Y	N	-	-	-
32G3925	SCSI 68-pin to 50-pin Converter	8/16	Int.	-	-	-	N	Y	-	-	3551001
36L9636	Netfinity Two-Drop Internal SCSI Cable <sup>7</sup>	16	Int.	-	-	-	Y	N	16-bit, 2 drop	-	-
External Tape Enclosures											
3510020	External Half High SCSI Storage Enclosure <sup>8</sup>	8/16	Desktop	B	-	-	N	N	8-bit or 16-bit	-	-
3551001	NetMEDIA Storage Expansion Unit EL <sup>9</sup>	16	Rack	B	-	-	Y	N	16-bit, 4 drop	-	-
10L7113	NetMEDIA Systems Management Adapter <sup>10</sup>	16	-	-	-	-	N	N	N	-	3551001
3503B0X	DLT External SCSI Enclosure <sup>11</sup>	16	Desktop	B	-	-	N	N	16-bit	-	-
External Tape Libraries <sup>12</sup>											
3502108	DLT Tape Autoloader	16	Desktop	B	280/560	5/10	Y	-	-	1/1	-
3502x14	DLT Tape Library	16	Desktop or Rack	B	490/980	5/10	Y	-	-	1/1	-
3503108	DLT8000 Tape Autoloader	16 LVD	Desktop	B	320/640	6/12	Y	-	-	1/1	-
3503x14	DLT8000 Tape Library	16 LVD	Desktop or Rack	B	680/1120	6/12	Y	-	-	1/1	-
3570xxx	Magstar MP 3570 Tape Subsystem (models B2x and C2x	Diff.	Rack	B	100/300	2.2/66 or 70/15.0	Y	-	-	1/1	-

1. To determine cable requirements, note the tape drive's SCSI interface, the appropriate SCSI controller from the system configurator section and the desired enclosure then refer to Appendix D: Cables-Storage Units-Controllers.
2. Data compression typically provides a 2X improvement in capacity and transfer rate, but since data compression is affected by many factors, actual improvements may be more or less than 2X.
3. Tape drive is capable of self termination.
4. If installed as the last or only device on a SCSI cable, termination is required. Check system unit SCSI cabling to assure termination is included. Where internal termination is not included, PC Server SCSI Terminator Kit (P/N 94G7587) should be used.
5. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).
6. A 16-bit terminator is included for attachment to an internal cable.
7. Netfinity Two-Drop Internal SCSI Cable (P/N 36L9636) is a wide two-drop terminated cable and is required for attachment of internal tape drives to the onboard SCSI controller of a Netfinity 1000, 3000, 3500 M10, or 5000 when the hard disk drives are attached to a RAID Controller.
8. Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either tape drive self termination or SCSI-2 16-bit Active Termination (P/N 32G3918).
9. Provides a black 3U, 19" rack or NetBAY3 mountable tape enclosure. Provides two full high (FH) or four half-high (HH) extended length 5.25" bays. External connector is 0.8mm VHDCI. Includes two power supplies and two power cords.
10. Installs in a 3551001. Provides repeater function and LVDS interface allowing longer cable lengths and auto-termination when the 3551001 is powered off.
11. Provides a black desktop DLT tape enclosure. External connector is 68-pin high density. Requires termination by the tape drive or by installation of a SCSI-2 16-bit Active Termination (P/N 32G3918).
12. Tape library attributes and prerequisites are located in Appendix B: Tape Library Attributes.

Note: SCSI support for tape drives is provided by system unit onboard (standard) controller (no-RAID function) or PCI Fast Wide Ultra SCSI Adapter P/N 02K3454.



# Appendix B: Tape Library Attributes

Part Number	Description	SCSI Interface												
		LEGEND F: Female - External M: Male - External 68: 16-bit, 68 pin High Density Connector Diff: Differential SCSI												
		SCSI Interface	Form Factor	Bezel - (B)lack	Terminator Included	External Cables Incl. (m)	SCSI Controllers Incl.	Data Cartridges Incl.	Cleaning Cartridges std./max	Cartridge Mags std./max	Qty. of drives - std./max	Max GB-Native/Compressed	MB/sec. - Native/Compt. 1	
3502108	DLT Tape Autoloader	M68	Desktop	B	Y	M68-M68 3, M0.8mm - F68 Converter	Y	1/8	1	1/1	1/1	280/560	5/10	
3502314	DLT Tape Library - Tower	M68	Desktop	B	Y	M68-M68 3	Y	1/14	1	2/2	1/3	490/980	5/10	
3502R14	DLT Tape Library - Rack <sup>2</sup>	M68	4U Rack	B	Y	M68-M68 3	Y	1/14	1	2/2	1/3	490/980	5/10	
33L4979	DLT Library Drive Upgrade <sup>3</sup>	M68	-	-	N	Jumper	N	-	-	-	-	-	5/10	
94G7442	Fixed Shelf	-	-	-	-	-	-	-	-	-	-	-	-	
3503108	DLT8000 Tape Autoloader <sup>11</sup>	LVD	Desktop	B	Y	M68-M68 3	Y	1/8	1	1/1	1/1	320/640	6/12	
3503314	DLT8000 Tower Tape Library <sup>11</sup>	LVD	Desktop	B	Y	M68-M68 3	Y	1/14	1	2/2	1/3	680/1120	6/12	
3503R14	DLT8000 Rack Tape Library <sup>11</sup>	LVD	4U Rack	B	Y	M68-M68 3	Y	1/14	1	2/2	1/3	680/1120	6/12	
09N4035	DLT8000 Drive Upgrade <sup>4, 11</sup>	LVD	-	-	N	Jumper	N	-	-	-	-	-	6/12	
3570B21	Magstar MP 3570 Tape Subsystem <sup>5</sup>	Diff	6U Rack	B	Y	4.5	Y	1/20	1	2/2	1/2	100/300	2.2/6.6	
3570B22	Magstar MP 3570 Tape Subsystem <sup>5</sup>	Diff	6U Rack	B	Y	4.5	Y	1/20	1	2/2	2/2 <sup>6</sup>	100/300	2.2/6.6	
3570C21	Magstar MP 3570 Tape Subsystem <sup>5</sup>	Diff	6U Rack	B	Y	4.5	Y	1/20	1	2/2	1/2	100/300	70/15.0	
3570C22	Magstar MP 3570 Tape Subsystem <sup>5</sup>	Diff	6U Rack	B	Y	4.5	Y	1/20	1	2/2	2/2 <sup>6</sup>	100/300	70/15.0	
08L6517	3570 Adapter Card Kit <sup>7</sup>	Diff	-	-	Y	4.5	Y	-	-	-	-	-	-	
08L6516	Second "B" Drive for B21 <sup>8</sup>	Diff	-	-	-	-	N	-	-	-	-	-	2.2/6.6	
08L6480	Second "C" Drive for C21 <sup>8</sup>	Diff	-	-	-	-	N	-	-	-	-	-	70/15.0	
Magstar MP Media <sup>9</sup>														
05H2462	Magstar MP Fast Access Linear Tape Cartridge, B-format <sup>10</sup>	-	-	-	-	-	-	-	-	-	-	-	-	
05H2463	Magstar MP Cleaning Cartridge	-	-	-	-	-	-	-	-	-	-	-	-	
08L6187	Magstar MP Fast Access Linear Tape Cartridge, C-format	-	-	-	-	-	-	-	-	-	-	-	-	

- Transfer rates are for single SCSI channel configurations. Tape libraries utilizing split library or dual host configurations may obtain higher rates. Data compression typically provides a 2X improvement in capacity and transfer rate, but since data compression is affected by many factors, actual improvements may be more or less than 2X.
- Requires Fixed Shelf (P/N 94G7442) for installation in an IBM rack or NetBAY22.
- Upgrade 33L4979 is an additional drive for 3502x14 DLT Tape Libraries. Up to two drive upgrades may be installed for a maximum of three drives per 3502x14.
- Upgrade 33L4035 is an additional drive for 3503x14 DLT Tape Libraries. Up to two drive upgrades may be installed for a maximum of three drives per 3503x14.
- Includes rack mounting hardware and two power cords (120 V and 250 V). Models B22 and C22 include an additional 2 power cords.
- The two tape drives are daisy-chained on the same SCSI bus with an included 0.5 meter SCSI cable. Dual Host and Split Library configurations require 3570 Adapter Card Kit (P/N 08L6517).
- Required for Dual Host or Split Library configurations with 3570B2x or 3570C2x containing two drives.
- Required for either dual host or split library operation. Should be installed by qualified service personnel.
- Magstar MP Media can be ordered by calling 888-IBM-MEDIA or 888-426-6334 in the US, Canada, or Puerto Rico.
- B-format tape cartridges can be used in either Magstar MP 3570 Model B or C tape drives.
- Planned availability of November 1999.

# Appendix C: UPS Runtime Estimate (minutes)



				Tower				Rack Mount		
				International	SU-700iNET	SU-1000iNet	SU-1400iNET	SU-2200iNET	SU-1400RMiB	SU-3000RMiB
				Part Number	94G4073	94G4074	94G4075	94G4076	94G6675	94G6677
				United States	SU-700NET	SU-1000NET	SU-1400NET	Not	SU-1400RMB	SU-3000RMB
				Part Number	94G3134	94G3135	94G3136	Available	94G6674	94G6676
Servers	# Pwr. Cords Std/Max	VA Load Max./Typ. <sup>1</sup>	Watts Load Max./Typ. <sup>1</sup>	minimum/ typical <sup>4</sup>	minimum/ typical <sup>4</sup>	minimum/ typical <sup>4</sup>	minimum/ typical <sup>4</sup>	minimum/ typical <sup>4</sup>	minimum/ typical <sup>4</sup>	minimum/ typical <sup>4</sup>
Netfinity 1000 <sup>2, 5</sup>	1/1	225/160	225/160	22/32	36/51	57/80	114/156	-	-	
Netfinity 3000 <sup>2</sup>	1/1	225/160	225/160	22/32	36/51	57/80	114/156	-	-	
Netfinity 3500 M10	1/1	300/210	300/210	12/20	22/36	34/57	85/21	-	-	
Netfinity 4000R	1/1	210/150	150/105	-	-	-	-	63/91	130/165	
Netfinity 5000 <sup>2</sup>	1/2	475/330	475/330	-	12/19	20/30	47/76	15/23	42/62	
Netfinity 5500 <sup>2</sup>	1/2	540/375	540/375	-	-	16/26	38/63	12/21	35/55	
Netfinity 5500 M10 <sup>2</sup>	1/2	540/375	540/375	-	-	16/26	38/63	12/21	35/55	
Netfinity 5500 M20 <sup>2</sup>	1/2	640/450	640/450	-	-	12/20	31/54	9/15	29/45	
Netfinity 5600 <sup>2</sup>	2/3	350/245	350/245	-	18/28	29/43	73/104	22/34	59/84	
Netfinity 7000 M10 <sup>2</sup>	1/2	745/525	745/525	-	-	12/17	26/40	8/12	26/35	
Netfinity 8500R <sup>2</sup>	3/3	1450/1015	1450/1015	-	-	-	-	-	9/16	
Other Devices										
Netfinity EXP15 (3520) <sup>2</sup>	2/2	400/280	400/280	-	-	-	-	18/27	57/84	
Netfinity EXP200 Storage Expansion Unit (35301RU) <sup>2</sup>	1/2	400/280	400/280	-	-	-	-	18/27	57/84	
Netfinity Fibre Channel RAID Controller Unit (3526) <sup>2</sup>	2/2	160/105	160/105	-	-	-	-	60/91	140/183	
DLT Tape Autoloader (3502-108)	1/1	-	135/100	42/61	62/80	96/127	179/221	72/99	142/173	
DLT Tape Library (3502-R14/314)	1/1	-	135/100	42/61	62/80	96/127	179/221	72/99	142/173	
DLT 8000 Tape Autoloader (3503-108)	1/1	-	135/100	42/61	62/80	96/127	179/221	72/99	142/173	
DLT 8000 Tape Library (3503-R14/314)	1/1	-	135/100	42/61	62/80	96/127	179/221	72/99	142/173	
Magstar MP 3570 Tape Subsystem (B2x)	1/1	-	110/75	55/85	75/100	118/163	209/268	91/131	165/207	
Magstar MP 3570 Tape Subsystem (B2x)	1/1	-	200/140	22/39	39/59	63/92	129/173	45/68	103/137	
NetMEDIA Storage Expansion Unit EL (3551)	2/2	-	185/130	25/44	42/64	69/98	138/182	50/74	111/145	
Netfinity SP Switch (35291RY)	2/2	-	115/80	54/80	74/95	116/155	206/250	90/125	162/197	
UPS Attributes										
Communication Links to Servers	-	-	-	1	1	1	1	1	3	
Color	-	-	-	black <sup>3</sup>	black <sup>3</sup>	black <sup>3</sup>	white	black	black	
EIA Height	-	-	-	-	-	-	-	3U	3U	
International Models										
Receptacles (IEC 320-C13, C19)	-	-	-	4	4	4	8, 1	4	8, 1	
Live Cord Receptacle (IEC 320-)	-	-	-	C14	C14	C20	C20	C14	C20	
US Models										
Receptacles (NEMA 5-15R)	-	-	-	4	6	6	-	6	8	
Line Cord Length, Plug	-	-	-	6 ft., 5-15P	6 ft., 5-15P	6 ft., 5-15P	-	6 ft., L5-15P	6 ft., L5-30P	

1. This table represents general guidelines for selecting the appropriate UPS based on minimum and typical runtime estimates. A 'maximum configuration' load will result in 'minimum' UPS runtime. 'Typical' loads are based on a production system running at approximately 70% of maximum capacity. The 'typical' loads represent a more likely configuration and, therefore, a more likely estimate of runtime. Customer environments are unique and are unlikely to be precisely represented by any of the specific entries in the table.

2. Power-Factor Corrected (PFC) power supply. Runtime estimates have been adjusted accordingly.

3. Early versions were white. US versions currently shipping in cartons clearly marked as "black". International version will be black by the end of 1Q99.

4. Data provided by APC.

5. Netfinity 1000 is not available in the Americas.

6. Netfinity 4000R is only available in the United States.

Note: For runtime estimates of multiple components attached to a single UPS, add the number of Watts for all selected components. Use the total Wattage and Total Configuration Runtime Estimator to determine which UPS provides an acceptable duration of estimated runtime.

Total Configuration Runtime Estimator (Time in minutes) <sup>1</sup>						
Total Configuration Load (Watts)	Tower				Rack Mount	
	SU-700iNET 94G4073	SU-1000iNET 94G4074	SU-1400iNET 94G4075	SU-2200iNET 94G4076	SU-1400RMiB 94G6675	SU-3000RMiB 94G6677
	SU-700NET 94G3134	SU-1000NET 94G3135	SU-1400NET 94G3136	Not Available	SU-1400RMB 94G6674	SU-3000RMB 94G6676
200	22	38	62	130	45	104
250	17	28	43	104	34	84
300	12	22	34	85	25	70
350	9	18	29	71	22	58
400	7	14	23	65	18	52
450	5	12	20	52	15	45
500	-	11	18	43	13	38
550	-	9	16	38	11	35
600	-	8	13	34	10	31
650	-	7	12	31	9	29
700	-	6	11	28	8	26
750	-	-	10	25	8	24
800	-	-	9	23	7	22
850	-	-	8	21	7	20
900	-	-	7	19	6	18
950	-	-	6	18	5	17
1000	-	-	-	17	-	16
1050	-	-	-	16	-	15
1100	-	-	-	15	-	14
1150	-	-	-	14	-	13
1200	-	-	-	13	-	12
1250	-	-	-	12	-	11
1300	-	-	-	11	-	10
1350	-	-	-	10	-	9
1400	-	-	-	10	-	9
1450	-	-	-	9	-	8
1500	-	-	-	9	-	8

1. Data provided by APC.

Steps:

1. Identify the devices contained in the configuration.
2. Sum the load (watts) of all devices in the configuration. Use either Maximum Load for minimum runtime, or Typical Load for typical runtime.
3. Find the Total Configuration Load in the table above.
4. Select the most appropriate UPS model to achieve the desired runtime.

NOTE: If the Total Configuration Load is greater than the entries above, split the load across two or more UPS units.

[illegible]

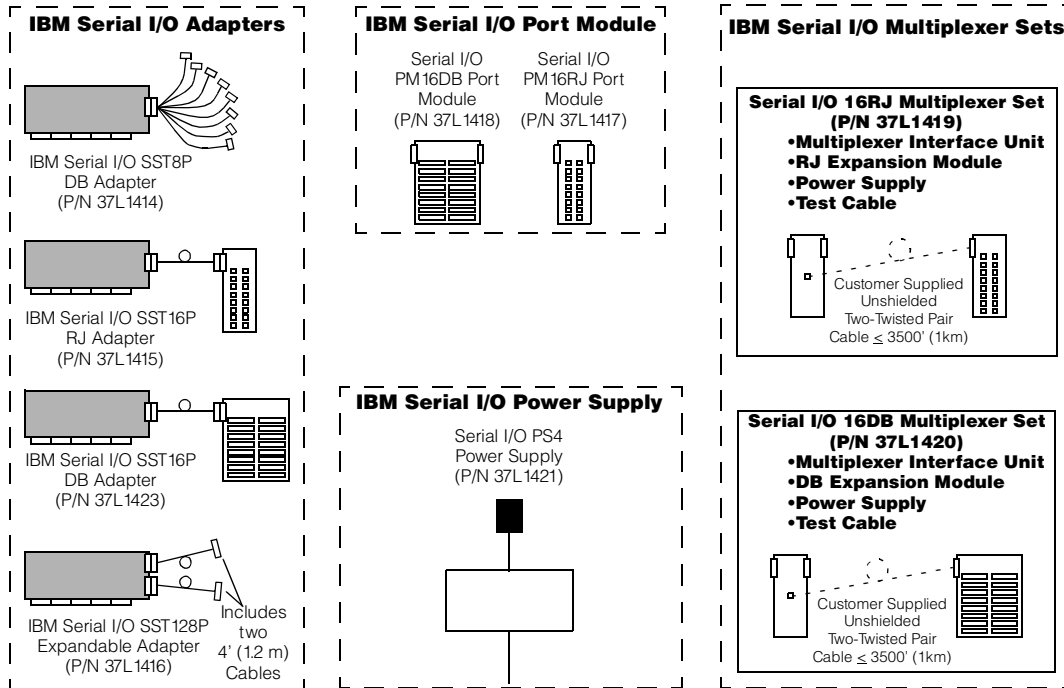
F: Female - External M: Male - External I: Internal 68: 16-bit, 68-pin High Density connector 50: 8-bit, 50-pin Centronix Connector 08: 16-bit, 68-pin Very High Density Connection Interface (VHDCI) 0.8 mm connector 16: 16-bit, 68-pin connector 8: 8-bit, 50-pin connector				Instructions: Identify Desired Controller Row and Storage Unit Column. The intersection of row and column contains the cable group letter which supports the connection. Go to the cable group under the corresponding storage unit for specific support. Read all Notes for row, column, and any cable group footnotes.							
				Storage Unit		35202RU	35301RU	3510020	3503B0X	3551001	Adapter 10L7113
				Max.MB/sec. <sup>6</sup>		40	80	-	-	-	-
				LVDS		X	X	-	-	-	-
				Connector Type		F0.8	F0.8	F68 or F50	F68	F0.8	F0.8
Description	Part Number	Max./Channel (MB/sec) <sup>6</sup>	LVDS	Connector Type/Max	Note #	8, 13	8, 16	10, 11	11, 12	8, 11	8, 11, 15
Cable Group G (Other)											
PC Server F/W to Fast External SCSI Cable-1M	70G9858	-	-	M68-M50	-	-	-	X <sup>10</sup>	-	-	-
SCSI-2 16-bit Active Terminator	32G3918	-	-	M68	-	-	-	X	X	-	-
Cable Group H											
Netfinity SP 2.3 M Cable	03K9220	-	n/a	-	-	-	-	-	-	-	-
Netfinity SP 5 M Cable	03K9221	-	n/a	-	-	-	-	-	-	-	-
Netfinity SP 10 M Cable	03K9222	-	n/a	-	-	-	-	-	-	-	-
GBIC											
Netfinity Fibre Channel Short-Wave GBIC	03K9308	-	n/a	S/W Fibre	7	-	-	-	-	-	-
Netfinity Fibre Channel Long-Wave GBIC	03K9307	-	n/a	L/W Fibre	-	-	-	-	-	-	-

- Converts a F0.8mm into a F68-pin connector for attachment of an external M68 cable.
- Netfinity 5500 and 5500 M10 require IBM Netfinity SCSI Controller Cable (P/N 03K9313) to route the internal onboard SCSI RAID connector to an external F0.8 mm connector.
- Supports attachment to Ultra2 or single-ended SCSI controllers with operational speeds of up to Ultra2. Controller, storage unit, cable length or storage device limitations may apply (see Max. MB/sec row and column above).
- Cable lengths exceeding 4.3 meters are NOT supported for attachment to non-Ultra2 controllers.
- Installations with cable lengths greater than 2 meters are limited to SCSI Fast/Wide speeds of 20 MBps .
- Maximum supported speeds may be limited by installation of lower speed devices, controllers or cable lengths greater than 2 meters.
- Four short wave GBICs are included with Netfinity Fibre Channel Hub (P/N 35231RU).
- Rack installation cable management requires devices to have a minimum cable length of 2 meters. Cable length requirements will vary based on placement within a single or multiple rack suite.
- Connection to either Netfinity Fibre Channel Hub (P/N 35231RU) or Netfinity Fibre Channel PCI Adapter (P/N 01K7297) requires short wave fibre cables from Cable Group D.
- Cable groups B and C are for 16-bit tape drive installation while cable group G's P/N 70G9858 applies to 8-bit drives. External Storage Unit 3510020 comes equipped with both an F68 connector set for 16-bit tape drives and an F50 connector set for 8-bit drives. Attachment of cable P/N 70G9858 (Cable Group G) to a F0.8mm controller connector requires IBM .8mm to 68-pin SCSI Adapter (P/N 01K8017).
- Daisy chaining tape enclosures is not supported. Speeds are limited by cable lengths and installed devices.
- Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).
- Attachment to wide ultra SCSI controllers limits operational speeds to Ultra SCSI (40 MBps) for cables up to 2 meters in length and Fast/Wide SCSI (20 MBps) for cable lengths between 2 meters and 4.3 meters. Ultra2 SCSI controllers and cables allow cable lengths of up to 20 meters at up to 40 MBps.
- RAID support for tape drives is limited to Non-RAID functions and utilization of a dedicated channel.
- Installs in a 3551001. Provides repeater function and LVDS interface allowing longer cable lengths and auto-termination when the 3551001 is powered off.
- Attachment to wide ultra SCSI controllers limits operational speeds to Ultra SCSI (40 MBps) for cables up to two meters in length and Fast Wide (20 MBps) for cable lengths between 2 meters and 4.3 meters. Ultra2 SCSI controllers and cables allow cable lengths up to 20 meters at up to 80 MBps.
- Netfinity EXP200, 35301RU, includes a single 2 meter Ultra2 SCSI cable.
- Netfinity 1000 is not available in the Americas.
- Available in the US only.

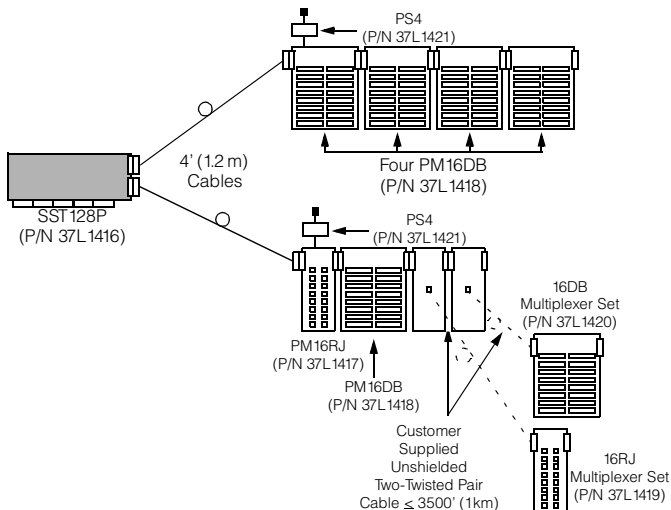




# Appendix E: IBM Serial I/O



## Sample Configurations



37L1414	Serial I/O SST8P DB Adapter <sup>1,6</sup>
37L1415	Serial I/O SST16P RJ Adapter <sup>2,6</sup>
37L1423	Serial I/O SST16P DB Adapter <sup>3,6</sup>
37L1416	Serial I/O SST128P Expandable Adapter <sup>4,6</sup>
37L1417	Serial I/O PM16RJ Port Module <sup>5</sup>
37L1418	Serial I/O PM16DB Port Module <sup>5</sup>
37L1419	Serial I/O 16RJ Multiplexer Set <sup>5,7</sup>
37L1420	Serial I/O 16DB Multiplexer Set <sup>5,7</sup>
37L1421	Serial I/O PS4 Power Supply <sup>5</sup>

- (1) Intelligent serial I/O interface card providing eight DB-25 RS232 serial connections using an octopus cable. Support for all ports at 9216 Kbps simultaneously.
- (2) Intelligent serial I/O interface card providing sixteen RJ-45 RS232 serial connections in a breakout box. Support for all ports at 115.2 Kbps simultaneously.
- (3) Intelligent serial I/O interface card providing sixteen DB-25 RS232 serial connections in a breakout box. Support for all ports at 115.2 Kbps simultaneously.
- (4) Intelligent interface card providing up to 128 RS232 serial connections (DB25 or RJ45) configured in 16 port increments utilizing any combination of Port Modules and Multiplexer Sets. Includes two 4' (1.2 m) bus cables. Each 4' cable supports attachment of 1 to 4 Port Modules and/or Multiplexer Interface Units for a total of 8 per adapter. The first Port Module or Multiplexer Set attached to a cable requires a Serial I/O PS4 Power Supply (P/N 37L1421). Support for all ports at 115.2 Kbps simultaneously.
- (5) Port Modules and Multiplexer Sets attach directly to one of the two standard 4' (1.2m) bus cables of the Serial I/O SST128P Expandable Adapter (P/N 37L1416) or directly to 1 or more Port Modules or Multiplexer Sets already attached to one of the cables. A maximum of 4 Port Modules or Multiplexer Sets may be attached to a single cable. The first Port Module or Multiplexer Set attached to a cable requires a Serial I/O PS4 Power Supply (P/N 37L1421).
- (6) Serial I/O Adapters are 32-bit PCI half length cards. A maximum of four Serial I/O adapters (in any combination) may be installed in a single host system.
- (7) Requires a customer supplied Unshielded Two-Twisted Pair (Category 3 minimum) cable with a maximum length of 3500 feet (1 Km).



# Important Notes

IBM reserves the right to change product specifications and to discontinue marketing products without notice.

\*MHz only measures microprocessor internal clock speed, not application performance. Many factors affect application performance.

\*\*When referring to hard drive capacity, GB stands for one billion bytes. Total user-accessible capacity may vary depending on operating environments.

\*\*\*The quotation function within ConfigXpert allows reseller specific pricing to be included.

\*\*\*\*Tape Drives which utilize data compression technology have storage capacity that will vary depending upon whether the drive is operating in native mode (without compression) or compressed mode. Actual storage capacity will vary based upon many factors and may be less than the maximum possible.

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